THE ULTIMATE GUIDE TO STUDYING ABROAD

BY SOUNDARYA BALASUBRAMANI

Some sample examples in this book are fictitious. Any resemblance to actual persons, living or dead, is coincidental.

First paperback edition August 2020

Book illustrated by Komal Telagavi

Designed by Rishabh Singh

Guide Cover Design by Mahantesh NG

ISBN: 978-81-94135-62-3

This guide was created by combining the following chapters from **Admitted** by Soundarya Balasubramani, originally published in August 2020. The guide covers the following topics:

- **Chapter 1**: Should you study abroad?
- **Chapter 3**: Choosing The Universities
- **Chapter 6**: Crafting Your Resumé
- **Chapter 7**: Writing Your Statement Of Purpose
- **Chapter 8**: Getting Your Letters Of Recommendation
- **Chapter 10**: Submitting Your Application!

* The chapter and page numbers referenced correspond to the printed edition of **Admitted.**

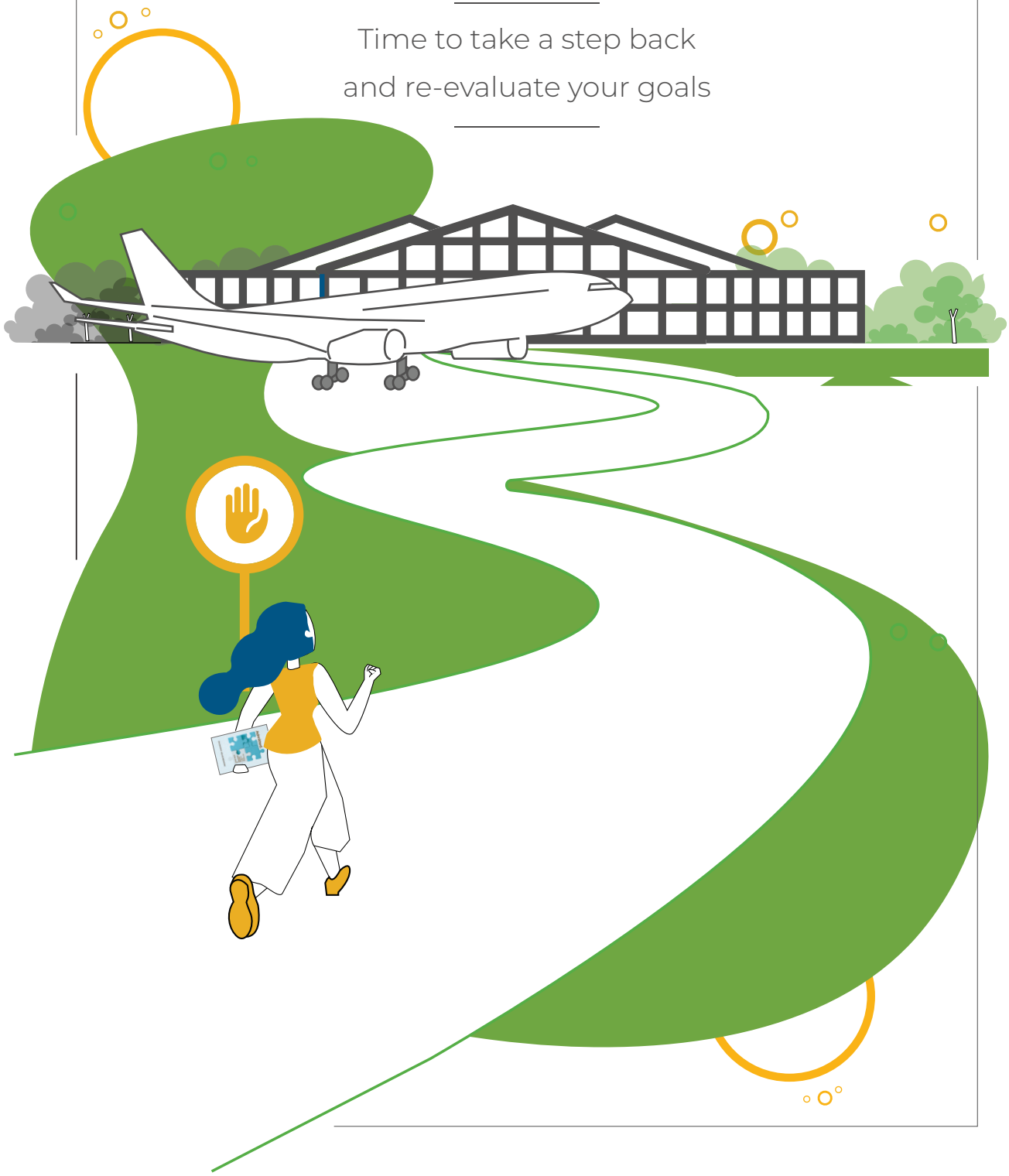
Chapter

01

SHOULD YOU EVEN

STUDY ABROAD?

Time to take a step back
and re-evaluate your goals



> *A major life decision is never a choice but rather a realization that the decision has already been made.*
>
> *- Doug Cooper*

Can you think back to the moment you made the decision to study abroad?

I remember a lot of trivial moments from my life. The first time I had gelato, I was in a yellow and black checkered shirt roaming the streets of downtown Seattle at night. I remember the neon sign outside the store, the name of the store owner, and even the witty comments he made. However, I don't remember the moment I decided to study abroad. It feels as though I have always wanted to. Now it's hard to imagine a moment when studying abroad was *not* my aim.

The big decisions in life are never made in a single moment. They are akin to a plant growing below the surface of a pond, that emerges to be seen by the naked eye when the decision is finally made. Yet, it possibly took months, or even years, to slowly grow with experiences and mistakes. Deciding to study abroad is one of the more important decisions you will be making in your life. In fact, it is a privilege that students did not have, just a century ago.

Glad you asked! The history of international education is a long, yet sparse, one[1]. For the first 800 odd years, there weren't many significant events. The coveted title of *the first person to study abroad* is attributed to *Emo of Friseland,* a Frision scholar supposedly from the Netherlands who studied at Oxford

University, England in 1190. Knowingly or unknowingly, he paved the way for international education in Europe (and interestingly has a Facebook page[2]). Fast forward about 600 years to 1792, the French educator Marc-Antoine Jullien[3] wrote to Louis XVI, asking him to institute a worldwide association for education composed of organizations from various European states. His wishes finally came true in 1952 at the World Fair in London[4] where representatives from the United States, Germany, and France met to discuss the possibility of an international education organization.

Over the next few decades, there was a slow but sure proliferation of students who traveled afar for brief summer programs. Although World War I and II were the epitome of international conflict, the aftermath of both helped highlight the importance of international education. In 1919, the Institute of International Education (IIE) was established and in 1923, America's first officially credited study abroad program was launched at the University of Delaware[5]. Policy makers and leaders suddenly turned to this practice as a way to restore global peace, by exposing young students to international culture.

President Franklin D. Roosevelt famously said that *"a nation, like a person, has a mind—a mind that must be kept informed and alert, that must know itself, that understands the hopes and needs of its neighbors—all the other nations that live within the narrowing circle of the world."* His ideologies helped in the establishment of the Fulbright Program by Senator William Fulbright in 1946[6]. Since the 1950s, the number of international students in the U.S. has grown steadily from 26,000 to almost 1.1 million in the 2018-19 academic year[7]. Out of the 1.1 million, over 200,000 students were from India[8].

What began as a single man's quest to study in a neighboring country for reasons unknown, has now become a childhood dream for millions of students around the world.

Does that include you?
We want to help you answer that in this chapter.

There are many myths around graduate school and the notion of studying abroad. Too often, students leave their home country only to be disappointed or disillusioned with the state of affairs in the new country. When you leave your home country, you don't just leave the physical landscape. You are also expected to leave behind the ethos and etiquettes that you learnt over the last two decades. At the very least, you are expected to learn a new set of them which in many cases will tend to contradict your previous experiences.

We could write pages just on the differences in day-to-day experience for someone who walks on the left versus someone who walks on the right[9]. To give a well-known example, it is very common for a stranger to ask you about your day when you walk the streets of America. People tend to be comfortable with, and even *like*, small talk in this country. Yet, it is rare to experience that level of superficial bonhomie in India. On the flip side, we have heard (and experienced) on countless occasions that it takes a longer time to make a long-lasting connection with someone in America than with someone in India, or your home country.

Is one better than the other? There is no easy or right answer.
There is only a choice to be made.

With this book, we want to help you with your graduate school application process, but *only* if that is something you have decided upon after careful consideration. By the end of this chapter, you will either have a stronger conviction towards your goal of studying abroad, or realize that you were trying to use the notion of studying abroad as a facade for another unrelated goal. If it is the former, we sincerely hope the rest of the book helps you in your journey. If it turns out to be the latter, know that you saved yourself

thousands of dollars and dozens of hours writing essays and applications.

Either way, it's a win-win.

REASONS TO STUDY ABROAD

There are many reasons to pursue graduate studies abroad. You might want to earn a lot of money, learn new concepts, settle down over there, or just meet a diverse set of people. Whatever the reason might be, it all comes down to the following question: *are you prepared to face the other side of the coin?*

We'll go through a few reasons where it's worth pointing out the other side, and make you think harder about your decision.

We all seek prosperity in our career. For good reason. There are various studies[10] that draw out the correlation between money and happiness. A study conducted at Princeton University[11] broke down happiness into two parts: emotional well-being and life evaluation. The former refers to the quality of someone's daily life—a measure of how often one experienced joy, anger, stress, and affection the *previous* day. The latter alludes to a more zoomed out perspective of how one evaluates their whole life when asked how satisfied they were. The results found a strong correlation between money and emotional well-being *until* a threshold of $75,000 is hit. Beyond that, more annual income did not necessarily equate to more day-to-day happiness. However, there was still a correlation between money and overall life satisfaction.

While wanting to earn is a natural human instinct, let's look at the cost you

are putting in to get to this goal. The average tuition fee of a master's degree could range from $30,000 all the way to $120,000[12], if you plan on pursuing an MBA. The range is so wide since it depends on numerous factors concerning the university: public vs private, in-state vs out-of-state, location, and so on. Taking the average to be $50,000, that amounts to a little over 35,00,000 INR (using the average exchange rate from 2019[13]). Now, let's add to this the cost for housing, healthcare, food, books, travel, and other activities. Assuming all of this comes to $800 per month, that amounts to almost $20,000 for 24 months. Finally, there are the pre-admit costs involved including fees for GRE ($205) and TOEFL ($180) exams, applications, and visas (~$350)[14] which could amount to $1500, assuming you submit eight applications with a $75 application fee per university.

Adding it all up, the average cost for pursuing a master's degree abroad ends up at **$71,000 — or almost 52,00,000 INR.**

Another critical piece of information commonly discounted by students is the opportunity cost in pursuing a master's degree. Apart from spending thousands of dollars, you also forego income that you would have otherwise earned by working in the two years you pursued your master's degree, which could add another 10,00,000 INR to the estimate above[15].

It's not all bad news though. Pursuing your graduate school abroad *will* help you secure jobs with a higher salary compared to a student with a bachelor's degree. In fact, the data shows that the jump in your market value as a potential employee increases proportionately to give you a great potential return on your investment. The more qualified (by level of education, such as bachelor's or master's) you are, the higher the increase in your expected salary.

Based on the 2018 salary data from the United States Department of Labor, a worker with a bachelor's degree earned a median weekly salary of $1,198 whereas **someone with a master's degree earned $1,434, an almost 20% increase.**

This percentage increase also seemed to vary greatly between majors, ranging from a mere 2.5% for a degree in journalism all the way to 24% for a degree in computer science[16]. For someone with a doctoral degree, the median weekly salary was $1,825, a 52% increase over the bachelors' salary.

You can also offset the cost through scholarships, part-time jobs, and assistantships (which we'll get to in Chapter 11) .

Pursuing higher education abroad clearly has its merits. It improves your market value without a doubt. What we don't want you to forget are the costs involved in the process of getting there. Assuming you earn $80,000 after graduating with a master's degree, it might take you between three to ten years to pay back your education loan, depending on how much you manage to save every year.

When you calculate expected salary, don't forget to take into account the taxes you would incur at the federal and state level, which can add up to a sizable amount, **between 15% to 25%**[17], pretty quickly.

Fair enough. We can resonate with that sentiment. However, there is an important bridge that connects your dream of studying in a country to settling down over there.

That bridge is called *jobs*.

Only a handful of universities in the U.S. boast a close to 100% placement rate. Even the ones that have high numbers have them because of the way they calculate it. Rather than looking at the percentage of students who got a job before the end of their graduate school, they might calculate the percentage of students who got one within three months *after* graduating[18], since that is the buffer period you get before you have to leave the country. A survey of over 1000 student alumni by the World Education Services[19] found that only 33% were employed before completing their graduation, but this increased to 87% within six months.

> The National Association of Colleges and Employers' 2018 Job Outlook report[20] found that only 23.4% of employers who responded mentioned that they're open to hiring international students, a **4.1% decrease from the previous year.**

The good news is that most of the top tech firms you hear about *do* recruit international students, which makes up a sizable portion.

One of the biggest—and less cited—challenges in finding a job, is the lack of contextual cultural knowledge that one needs to form connections in a

foreign country. In India, it is a common occurence to see companies visiting universities to recruit a predetermined number of students. The student's task here is to prepare for the interview and show up on time on the day. In the U.S., it's a little more complicated. There is a heavier weight placed on networking with employees and attending career fairs to first secure an interview, before you can prepare for it.

Until I came here, I never cared to reach out to people actively on LinkedIn to request time for a *coffee* chat. I didn't have to walk up to strangers in events and ask about their job, hoping to get their email address. Or worse, stand in a room of 500 during a career fair and wonder anxiously how to make myself stand out. In the end, all those experiences helped tremendously. I just wish I had known about the culture shock[21].

Finally, even if you end up getting an offer and your employer is willing to sponsor your H-1B visa, your name needs to be picked in the lottery. The WES report quotes that[19], "*Across the board, from enrollment to professional contexts after graduation, international respondents still in the U.S. reported that work authorization was, alongside the effort to forge professional connections, their biggest challenge*."

ETCH, ONE, BEE

For those unaware, H-1B is a type of **nonimmigrant visa** awarded to those who graduate with a bachelor's degree or higher and end up in specialty occupations in fields such as engineering, medicine, architecture, science, accounting, and more. Every fiscal year, the United States makes 85,000 such visas available. However, since the year 2013, the number of applications has exceeded the number of slots[22], leading to a lottery system where the chance of your name getting picked is decided by mathematics. In the year 2020, over 275,000 applications were received for the 85,000 slots.

Not exactly. These 85,000 slots are split into 65,000 and 20,000. The advantage for master's and doctoral candidates is that the 20,000 pool is reserved *only* for them, and cannot be consumed by those who graduated with a bachelor's.

One piece of good news came from the Department of Homeland Security on January 31st, 2019[23] when they announced that the order of the names getting picked will be reversed. Previously, applicants with an advanced degree were first picked for the 20,000 pool and those who did not get picked were added with the rest of the bachelor's applicants to be picked in the 65,000 pool. With this change, the order has been reversed. Now, everyone is entered into the pool for the 65,000 slots first. Among those not picked, applicants with an advanced degree get a second chance in the 20,000 pool.

USCIS estimates that "*reversing the order that the lottery takes place should result in approximately 16 percent more lottery numbers going to eligible candidates with the U.S. master's degree.*"[24]

Based on a quick back-of-the-envelope calculation, we discovered that this increased the chances for an advanced degree candidate to be picked from **51% to 55% in 2019**. Not too bad.

Tying all this together, if there was one piece of advice I wish someone had given me before I came to the U.S., it was the following:

Anticipate difficulty and prepare early.

Some students think the hardest part of the journey is over when they get the admit. They delude themselves into the false expectation that as long as they're studying in a university that is well-recognized, things will fall in place organically. This delusion is broken within the first few months of arriving. We say this from personal experience as well. There is just so much more demand than supply for jobs.

So go abroad with the expectation that it *will* be a difficult journey before you get to settle down.

But also an equally rewarding one.

Talk to any agricultural expert, and they will tell you how important fertilizer is to the yield of a crop, which in turn yields high returns. Yet, historical data will show you that the usage of fertilizers have always stayed lower in Africa compared to Asia, leading to greater agricultural yields in Asia. The solution seems simple, right? The governments simply need to give away the fertilizer for free or heavily subsidize its cost so everyone has access to it.

In fact, Stephen Carr, a former World Bank specialist on Sub-Saharan African agriculture quoted, "*The rest of the world is fed because of the use of good seed and inorganic fertilizer. This technology has not been used in most of Africa. The only way you can help farmers get access to it is give it away for free or subsidize it heavily.*" Seems pretty consistent with what one would think is the panacea here. And that's exactly what many governments did. In India, for example,

fertilizer subsidies amounted to 0.75 percent of GDP between 1999-2000. In Zambia, the subsidies consumed almost 2 percent of the government's budget[25].

Yet, in western Kenya, simply giving away fertilizer for free or under heavy subsidy did not solve the problem completely, nor was it economically sustainable. Farmers tended to use too much fertilizer leading to a low yield of the crop. In some cases, they purchased it only to resell and make a profit. Rather, the solution that seemed to work better and also be economically cheaper involved three steps:

- Doling out a small subsidy on fertilizers for a limited time period right after the harvest season
- Delivering it for free
- Educating the farmers on the importance of using fertilizers

---

Why did this solution work?
Because it tackled the right problem.

The farmers, to an extent, *did* understand the value of using fertilizer to improve their yield. They also knew of the subsidies given out by their government. By any rational estimate, one would assume that all the farmers would take advantage of it. However, they did not. The real issue fell in the domain of psychology. It had to do with the fact that they procrastinated purchasing the fertilizer throughout the season, and in the end, when time was limited, the utility cost of going to the store and purchasing it seemed high enough that they became impatient and abandoned the idea altogether. This was exacerbated when they did not have enough money to purchase it at the very end of a post-harvest season and weren't aware of all the benefits it provided.

The real problem wasn't just the lack of money. It was a combination of a lack of money, appropriate education, and much-needed motivation. Hence the limited time subsidies with a free delivery and education solved the problem in a manner that was economical in the long term.

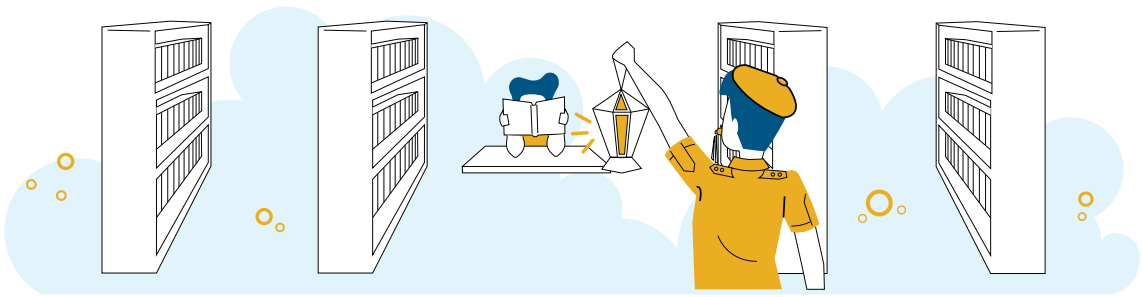
More often than not, not liking your job or environment is not the problem itself, but is rather a *symptom* of a problem that is yet unknown.

PUT YOUR INVESTIGATOR'S HAT ON

Understanding the root cause of unhappiness has been the topic of countless articles around the internet[26], so reading a few will begin to give you an idea not of the answer, but rather the questions you can ask yourself to arrive at the right answer. Famous computer scientist Alan Kay said it best: "*A change of perspective is worth 80 IQ points.*"

> The most serious mistakes are not made as a result of wrong answers. Rather, they are a consequence of asking the wrong questions.

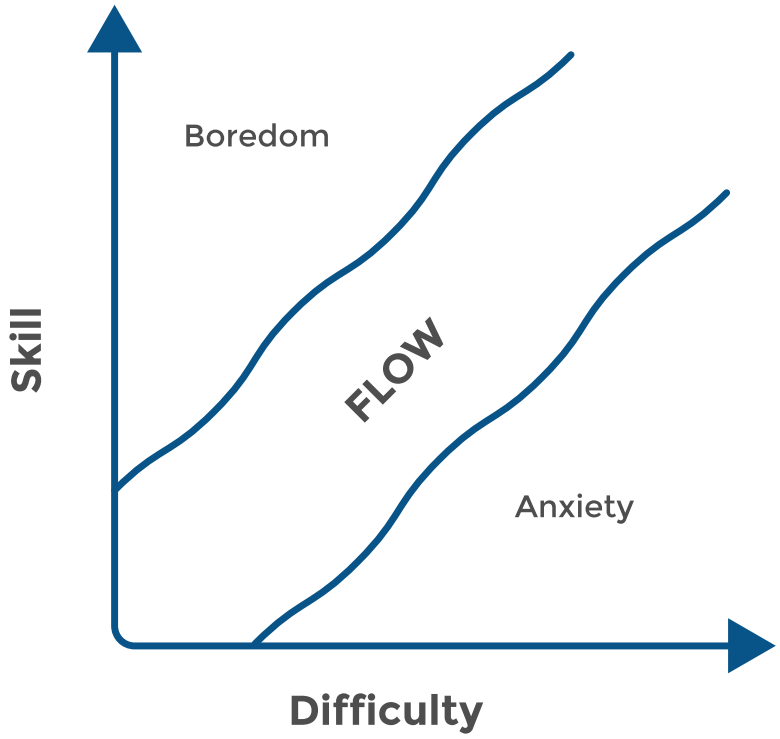
One of the more influential books I've read in my life is *The Flow*[27] by Mihaly Csikszentmihalyi (pronounced me-high cheek-sent-me-high), a renowned Hungarian-American psychologist who invented the concept of *flow*. Mihaly describes flow as "*a state in which people are so involved in an activity that nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it.*"



He bottles 25 years' worth of research on happiness into the 300 pages where you will find quotes from writers, violinists, mountaineers, and basketball players describing their experiences when they engage in activities in their field. One of my favorite quotes from the book is the following:

> *Flow is a loss of self-consciousness. [This] does not involve a loss of the self, and certainly not a loss of consciousness, but rather, only a loss of consciousness of the self.*

In the book, he also plots what has now become a famous chart, known as, you guessed it, *The Flow Chart*.



It is a simplistic plot of skill vs difficulty in accomplishing a task. If you are just beginning to play tennis and decide to compete against a veteran player, you will lose the game as well as your motivation to learn it further. You will continue to doubt your abilities and enter a state of anxiety, which is detrimental. However, if *you* are the veteran player and you keep competing against players who still have a long way to go to match your skill, you will enter a state of complacence, and eventually boredom, since the activity will

not excite you anymore. Neither are helpful for long-term happiness.

Mihaly posits that in an ideal scenario, you will remain in that narrow state of flow. How do you do it? By taking up tasks that are challenging yet achievable if you put in enough effort. Eventually, you will be more skilled, and take up tasks that are more challenging. This way, you will be in a state of flow by moving both horizontally and vertically, but not so much as to leave this state altogether.

How would you know if you're in that state? Like all good questions, there is no easy answer to that. You need to read about others' experience, and compare it against yours.

Do you feel like quitting because your job isn't challenging? Or because you don't see yourself forming a lasting bond with your co-workers? Could it be that you are just having a bad week? Understanding the root cause is in no way a simple problem. And attaining a lifelong sense of fulfilment doesn't happen by default to some. You need to work towards it by making necessary changes to your life and observing your response to those changes.

The best things in life aren't free, after all. They are obtained through an exhausting and exhilarating journey.

The *flow* is just one of the many concepts out there, such as the five whys[28], that you can utilize to figure out the source of your problem. If it turns out that you are indeed unhappy with your job because you yearn for the academic environment where intense learning happens everyday and wish to study in a strange new country, then by all means, we're rooting for you!

DAY 1: THE BIG APPLE

The first day I landed in New York was probably one of my saddest days at Columbia University. I landed at 9 AM in the John F. Kennedy airport, after a 25 hour long flight with a moderate fever. I was travelling internationally for the second time in my life. The first time was when I came to the U.S. through a summer scholarship. I had spoken to a lot of people that I was about to meet during the day over WhatsApp, in the two months leading up to this day. We had, as I'm sure you will soon, a lively group where questions were asked and answered every few hours. We also had a separate group just to engage in innocent chitchat. As soon as I entered my apartment, which in itself was difficult to find at first, I was greeted by my two roommates who had arrived earlier. We met through WhatsApp. Within the next hour, I was whisked off after a quick bite to spend the entire day outdoors with a dozen others, traveling to Staten Island, Times Square, and more places that I don't remember now.

It was a strange feeling. Being an introvert, speaking to someone over text messages was something I had mastered. However, meeting them in person and spending an entire day with a group of people who I had known for two months, yet did not really know at all, was really hard. I felt completely out of place and wanted to get home quickly. After roaming for ten hours, I decided to give in to my intense fatigue and return home sooner, and left the group to travel by myself through the subway at 11 PM. Even on a good day, I wasn't good with

directions. So you can imagine it was only likely that I ended up at the wrong destination, many blocks away from my home, in a location called Harlem. A location popular for its crime rate.

Add to this a dead phone and chilly night. With only a vague knowledge of my address, I began running in a direction that seemed right, constantly keeping an eye out for muggers and rogues. There seemed to be many that night, thanks to my vivid imagination. Fortunately, I finally reached home a little past midnight and spent the next two hours sobbing uncontrollably, wishing I had never come to this strange new country.

Of course, if that was the end of the story, I wouldn't be writing this book right now enthusiastically helping you to study abroad. I only say this so you can be prepared for such experiences; experiences that push you so far out of your comfort zone that your comfort zone's radius increases. If I move forward sixteen months to the last day I spent at Columbia, I was still sobbing uncontrollably, but for all the right reasons. Many of those that I met on the first day went on to become my friends, along with others I met in the period in between. I had a lot of firsts at Columbia, and in New York. Apart from finding my passion in becoming a Product Manager and writer, I also learned to be more fearless and outgoing from my time as a graduate student.

Graduate school in a new country will not be merciful. You *will* feel homesick. You will carry an imposter syndrome on your shoulders a lot of the time. Your perseverance will be tested to its limits. You might feel out of place a lot. However, you will also form lasting bonds in a short period of time. You will

meet people who will take your breath away with their intelligence. You might experience your 2 AM karaoke sessions for the first time. Embarrass yourself in public but not really care because really, no one else does. Sit in classes taught by professors who are among the most distinguished in their field. And professors who breathe life into the topics they teach.

You will experience freedom in a way you haven't before.

In my case, for the first time, I learned what it felt like to walk home at 4 AM every night from the library, after studying and working for hours on end. That was a privilege I did not have during my bachelor's due to the gross gender discriminatory policies followed in many universities in India and elsewhere. People misconstrue freedom with irresponsibility. I know from my experience that it's the other way round. You will learn to be *much more* responsible, since there is no one to take care of your daily needs anymore. And finally, when you get your job or internship offer, you will experience a deep sense of relief that is reserved only for those who have worked really hard.

So the question you need to ask yourself is: *does the good outweigh the bad?* Studying abroad is neither rosy nor dreadful. It has its fair share of ups and downs from which you will learn regardless of the expectations you set for yourself. However, it is a big decision that needs to be taken after careful consideration for all the reasons stated above: it costs a lot of money, puts you under immense pressure, and has no guaranteed return on investment.

If after reading all this you feel like this isn't aligned with your goal, or now is not the best time to study further in a new country, let us assure you that you saved yourself a fortune in both money and time.

> One of the hardest feats to achieve as you grow up and surround yourself with many opportunities is the ability to say *no*. Something even harder is standing up to the voices around you and shutting them out when needed.

Although we're sorry you spent the money to buy this book, you can always give it to someone else who needs it. On the other hand, if this is aligned well with your goal, then by all means, keep reading!

THE BALLAD OF OLD MAN PETERS

Since this book is aimed at educating you on how you can become more educated, it felt fitting that we share a story on the quest for education before we dive into the crux of it. I read this short-story in the summer of 2019, when I was devouring many books on creative non-fiction. In a true story titled *The Ballad of Old Man Peters*[29], Jon Franklin, a two-time Pulitzer prize winning author, recounts the life of an old man named Wilk Peters who spent his life chasing knowledge and fleeing ignorance.

Wilk was born in 1900 in Trinity County, Texas, to John and Martha Peters. The 1900s were a period when racism plagued America. At the age of eight, he had six other siblings to take care of, and was an agricultural laborer walking a plow mule. Yet, he knew he wanted more.

> His parents, though not educated beyond grammar school, knew the path to emancipation was through education.

Wilk's gift from his father was not a worn out tractor or a five acre farm; it was the dream that Wilk would become a doctor someday. He clutched onto that dream, intangible at times, and it kept him going when his father passed away, followed by his youngest sister. When he turned 18, he decided to

finally move away from his family towards his quest for education.

As you leaf through the pages of this inspiring—and at times melancholic—story, you will realize the lengths to which someone can go, and has gone, to seek education. One of my favorite passages from the story alludes to the day Wilk finally stepped into a classroom.

> *Wilk found himself, at age 23, a full-grown man with calloused hands and hardened muscles, sitting with his knees jammed under a tiny desk, wrestling with long division, surrounded by prepubescent sixth-graders. The effect was not what the admission officials had predicted. Wilk viewed his place in class as opportunity, not insult. If the children laughed at him he didn't notice, preoccupied as he was with the serious business of fractions, with the parsing of sentences and the memorization of poetry.*

Too often, we forget the wonders around us. Just by being able to read this book, this *passage*, you have proven to be luckier than half of the earth's population, being able to see, read, and comprehend the meaning of these words. As you try to seek further education, do not forget the privilege you enjoy in being a curious soul.

As for Wilk? He went on to become a librarian, standing at the gates of knowledge everyday and guarding them so future generations could reap the benefits. He also found his love for traveling, and flew to fifty six countries (that he could remember), and learnt German, French, Russian, Italian,

Spanish, and so much more. He did not become a doctor like his father dreamed of.

But, he became an educated man.

CONCLUSION

Re-read this chapter if you can. Spending a few more minutes now will save you heaps of time later when you look back with troubling doubts. Many of the students who leave their home country to pursue education abroad do not return, at least for a period of 5-10 years. That's more than enough time for a lot of significant changes to take place in your life. If you were planning to leave your home country and study abroad primarily because you wanted to earn more, obtain a better social status, or dislike your current job (and situation), we ask you to think again.

There are struggles associated with the transition that cannot be anticipated until you get here (or wherever you go). You will be put in situations that ask you to act against your natural instincts. A lot of the social concepts you learned previously might seem irrelevant. The solution is not to abandon them all and adopt new ones. In fact, there is no right answer. It varies from one situation to another. But suffice to say it's not all rosy.

As long as you are aware of that, and are ready to face new challenges and opportunities, we are rooting for you. Take a page from the story of the old man Wilk Peters to appreciate the opportunities you have around you. It's a *wonderful* time to be alive. If you have a curious mind and discipline to support that, there's nothing stopping you from getting what you want!

A LITTLE REFLECTION

Every chapter will have a few questions at the end for you to reflect upon. Don't skip over them.

- Why do you want to study abroad?
- What is lacking in your life right now that you believe higher education will have a solution to?
- What are you most grateful for in your life right now?

Chapter

03

CHOOSING

THE UNIVERSITIES

Time to become a satisficer and shortlist universities

We're back to decisions again. Think back to the most recent decision you made in your life. It doesn't have to be a significant one. It can even be a trivial decision of purchasing a Classmate Octane Premium gel pen over a Pilot Retractable Premium gel pen. How much thought did you put into making this decision? Did you consider all possible factors: the tip type, material, color, grip type, weight, price, popularity? Did you assign weights to each factor and pick the pen that was mathematically the more optimal one? Unless you were conducting extensive research on developing a new pen for your company or writing a thesis on the effects of one over the other, chances are you calculated a few pros and cons in your mind, such as cost and comfort, and picked the one that *satisficed* you.

That word is not a typo.

Not only is that word not a typo, it will be the guiding principle as you go through the ordeal of choosing universities.

SATISFICER, SIMON & SELECTING UNIVERSITIES

The term **satisfice**[1], **a linguistic blend of satisfy and suffice**, was coined by Herbert Simon[2] in 1956. Simon coined the term to strike a distinction between classical and behavioral economics.

Classical economics posits that we are all *maximizers* who strive to get the very best out of every decision we make. However, this assumes that we are rational and armed with the information needed to make that *optimal* choice. Simon proposed that this is rarely, if ever, the case, due to the limits of human cognition[3].

Rather, he suggests an alternative route wherein the "*decision makers can satisfice either by finding optimum solutions for a simplified world, or by finding satisfactory solutions for a more realistic world*." In both cases, the satisficer is happy to walk away with a *good enough* solution that meets a certain threshold set by them as opposed to the best possible one. And research[4] has shown that the satisficer is also *happier* on average than the maximizer, especially in situations where the available options are abundant and personal freedom is championed.

Why is this important?

Once you begin entering the rabbit hole of comparing universities, you will soon find the need to draw a boundary between being a satisficer and a maximizer. You will also tend to associate great importance to this decision and increase your stress levels by going over too many factors, always fearing that you haven't done a thorough enough job. Using the time and energy in your hand as a constraint, we will help you pick the factors that we believe are important to consider while choosing your top universities, but ultimately, the decision is in your hands.

So at this stage when you're beginning to narrow down universities to apply to, we want you to be a satisficer. Not a maximizer.

However, once you begin receiving admits from the places you apply to, you can turn to be a maximizer. But more on that in Chapter 13. For now, keep telling yourself to be a satisficer.

Well, the first thing to keep in mind about first instincts is that they are almost always wrong.

> Your first instinct in choosing universities might be to skim through a ranking website, note down the universities listed at the top, and begin applying. But before you fall into that trap, let's take a step back to **understand the mechanism** behind these ranking sites.

Based on a preliminary google search, you will notice that there are three ranking sites that grab the top spots: QS World University Rankings[5], Times Higher Education World University Rankings[6], and Academic Rankings of World Universities[7]. Taking National University of Singapore as an example, based on the most recent data, it ranks 11th according to QS, 23rd according to THE, and 85th according to ARWU. Why? Because the methodology used and data input for the ranking sites are significantly different. There is a weighted bias towards specific factors when the overall scores are measured.

METHOD TO THE MADNESS

Let's peek behind the curtains of each rankings site.

QUACQUARELLI SYMONDS (QS) WORLD UNIVERSITY RANKINGS

This is an annual publication by Quacquarelli Symonds, a British publication. According to Alexa Internet, an American web traffic tracking company, it is

the most widely viewed university ranking worldwide[8]. QS partners with Elsevier to provide the rankings across 48 subjects and also across regional areas such as Asia, Latin America, Europe, and more.

QS collects feedback from over 100,000 academicians, who are all asked to nominate the top 30 universities (and cannot vote for their own)[9]. This subjective feedback is given a weightage of 40%. The other performance indicators include the faculty-student ratio, citations per faculty, employer review, international student ratio, and international staff ratio.

TIMES HIGHER EDUCATION (THE) WORLD UNIVERSITY RANKINGS

This is an annual publication by the Times Higher Education magazine. Interestingly, until 2009, THE collaborated with QS to jointly publish the annual rankings. However, they turned to Thomson Reuters for a new ranking system in 2010 and later signed another deal with Elsevier in 2014[10]. Their rankings are also independently audited by the professional services firm PricewaterhouseCoopers (PwC).

THE collects feedback on 1,400 universities worldwide across 13 performance indicators that are grouped into five categories: teaching, research, citations, international outlook, and industry income[11]. Teaching, research, and citations each get a weightage of 30%. Their most recent academic reputation survey garnered over 21,000 responses and Elsevier examined over 77 million citations to arrive at the research influence.

ACADEMIC RANKING OF WORLD UNIVERSITIES (ARWU)

Also known as Shanghai Ranking, this is published by the Shanghai Ranking Consultancy, an independent organization focusing on higher education[12]. ARWU is regarded as one of the three most influential lists of university rankings, alongside QS and THE.

ARWU ranks over 1,800 universities out of which the top 1000 are published. ARWU seems to take a different approach[13]. They give 20% weight each to the following four indicators: staff winning Nobel Prizes or Fields Medals, highly cited researchers, papers published in *Nature* and *Science* journals, and papers indexed in Science Citation Index-Expanded and Social Science Citation Index. The rest is spread across alumni reputation and per capita performance.

Below is a table that puts this all together to give you a big picture view.

Category	Performance Indicators	QS	THE	ARWU
Academic & Research Reputation	Survey of academicians	40%	33%	-
Research Influence	Citations received globally	20%	30%	40%
Staff & Student Ratios	Various ratios across staff and students	20%	15%	10%
Staff & Alumni Reputation	Nobel Prizes and Fields Medals won	-	-	30%
Research Productivity	Papers published in top journals	-	6%	20%
Employer Reputation	Survey of employers	10%	-	-
International Outlook	International students and staff	10%	7.5%	-
Income Received	Externally received income for research	-	8.5%	-

> Do note that since we combined all the ranking methodologies into a single table, **a lot of the nuance is lost**. For example, although both THE and ARWU have weightage for research productivity, it means different things. THE calculates it based on papers published across all journals indexed by Elsevier's Scopus. On the other hand, ARWU *only* looks at papers published in *Nature* and *Science*. Hence, **we highly recommend looking at each of their methodologies** to get a better understanding.

All that data and information is to highlight a few points.

- First, when you're looking at these ranking sites, understand that the rankings mentioned are for the *entire* university and are not degree specific, meaning your program's ranking might be significantly different from the university's ranking. Take the case of Dartmouth College. It currently ranks 207th in the world according to the QS, but is an Ivy League with one of the top Engineering Management programs[14]. Even for the university level, both QS and THE rely on *subjective* data to compute it, which has its own biases.
- Second, all three ranking sites look at the citations received by a university on a global level. While this might be a good indicator for domains like biomedical sciences that have a *publish or perish* culture[15], it isn't a good representation of non-science majors that publish less by trade. Adding on to that, the ranking sites also don't take into account the non-English institutions.
- Finally, even if you choose to follow one of these sites, they still don't take all *your* factors into consideration. Ironically, these are the factors that have a direct impact on your day-to-day

experience, such as resources provided for networking, classroom amenities, quality of courses, quality of food and housing, to name a few[16].

You don't choose whether to buy a mac or windows laptop just by looking at the share prices of Apple and Microsoft, do you[17]? Sure, it's helpful to know they're doing well and still at the top of their game, but your need requires a lot more granular information.

No, we are not discrediting these ranking websites completely. You would still need them to pick universities since there is too much noise out there. Use these, but *only* as a starting point. Beyond that, we need to go deeper into the factors that will truly define your experience.

THE QUADRANT FRAMEWORK

When you're purchasing a new house, you don't just look at the price of the house. You also look at the location, mortgage, down payment, number of bedrooms, quality of furniture, and more. All of these factors will affect your experience after you move into the house. Your graduate school follows the same analogy.

Although it is easier to choose a university solely based on its rank, that is not an indicator of your experience, good or bad, once you join.

Below is a table with all the factors that we thought you should be looking at while evaluating the universities to apply to.

Requirements	Academia
CGPA GRE TOEFL IELTS Tuition	Courses Research areas STEM Certification
Career	**Miscellaneous**
Top Career Paths Average salary Internship & Placement Statistic	Ranking Location Personal Dealbreakers

- **Requirements:** Most universities try to reduce the applicant pool size by specifying the minimum *scores* that you must have to even apply in the first place. These scores allude to your CGPA, GRE, TOEFL, and IELTS exams. Apart from the scores, we placed the tuition fee in this section since that should be considered a limiting factor to apply as well, since it could range from $20,000 for a university like Texas A&M all way to $80,000 for a university like Columbia (not counting for scholarships or assistantships).

- **Academia:** Once you validate that you satisfy the requirements, this should be the second most important quadrant to look at. On average, you will spend about 25% of your waking hours in classes, 50% on assignments and research, and the rest on job search and leisure activities. So the courses you take and research you conduct will define the largest chunk of your graduate school experience.

- **Career:** Most of you want to not just study abroad, but also work abroad. We know from experience, as explained in Chapter 1, that getting an internship or a job is not the easiest feat to achieve. It would be wise to choose a university that helps you in this process in addition to teaching you the concepts and skills required for the job.

- **Miscellaneous:** This contains factors such as ranking and location that we couldn't place neatly under the other quadrants. Apart from the ones we've listed above for all quadrants, feel free to add more that are personal dealbreakers specific to your background.

Good question! Funnily enough, the problem isn't that there is *too little* information. Rather, there is *too much* of it.

This phenomenon even has a term: **information overload**. It was coined back in 1964[18] by Bertram Gross in his book *The Managing of Organizations*. As the decades rolled on, the overload only got more and more dire with the advent of the **internet, email, and now social media.**

Now, your task is to find useful information amidst all this noise, rather than just find the information.

Let's find out how we can do it for the various quadrants below.

REQUIREMENTS

The information on scores and tuition will be present in the department's website, although in different formats. Consider the following example: the Computer Science department at Purdue University clearly states that the

past admits all had a *"GPA of at least 3.5/4 or 85/100 or 8.5/10, and total TOEFL scores of at least 100 and subsection scores of at least 22, or IELTS scores of at least 7.5"*[19]. On the other hand, the Computer Science department at Stanford University states that they expect the *"applicants to have "good" English skills"* without specifying the minimum required scores[20].

For situations like this, we have another solution for you: **admits.fyi.**

University	Status	Target Major	Term	GRE				TOEFL
				Q	V	AWA	Total	
University of Michigan, Ann Arbor	Reject	Computer Science	Fall 2019	163	163	N/A	326	110
Stanford University	Admit	Computer Science	Fall 2019	170	159	N/A	329	111
Arizona State University	Admit	Computer Science	Fall 2018	169	150	N/A	319	98
Syracuse University	Admit	Computer Engineering	Spring 2018	158	146	N/A	304	N/A
Georgia Institute of Technology	Reject	Electrical & Computer Engineering	Fall 2016	161	150	N/A	311	100

Two 2015 graduates from BITS Pilani, Pranav[21] and Abdul[22], used their coding expertise and curious minds to build *admits.fyi* with more than 350,000 data points from past admits and rejects. They spent weeks gathering this data from various sources, cleaning it, and building an intuitive user interface for everyone to consume[23]. Every admit and reject has details on undergraduate school, graduate school, CGPA, GRE score, TOEFL score, major, and more. In the absence of a baseline on the department's website, use this as a sanity check *if* there are enough data points (>50). However, know that outliers are always possible.

ACADEMIA

Under Academia, we have courses, research, and STEM certification.

COURSES

Fortunately, every department has a course catalog which lists all the courses you can potentially take during your graduate school. Apart from providing

the course titles, most universities will supplement that with one-paragraph descriptions, instructor names, duration, offered semester, and number of credits. Similar to *Requirements*, this too changes based on the university. For example, Texas A&M lists all its mechanical engineering graduate courses with just a one-paragraph description on its site[24]. University of Washington goes further to create a separate page for each course—detailing your takeaways, syllabus, homework deadlines and more—from its list of courses[25]. Columbia University on the other hand provides you a flowchart of the courses you can take based on the specialization you are interested in[26]. Bottom line?

Course information *will* be on the department website.
If it isn't, you should think twice about applying to that university.

Universities in the U.S. also go a step further to include course evaluations collected from past students. However, these are generally hidden behind an authentication portal, and not accessible to the public. It's worth checking once though.

RESEARCH

Here's some good news for all the computer science graduates out there: a huge chunk of your work in collecting information on research conducted at U.S. universities has already been completed by the creators of **CSRankings**[27]. Below is a good introduction to the website, taken from its FAQ page:

> *Rankings are intensely popular and influential. While we might wish for a world without rankings, wishing will not make rankings go away. Given this state of affairs, it makes*

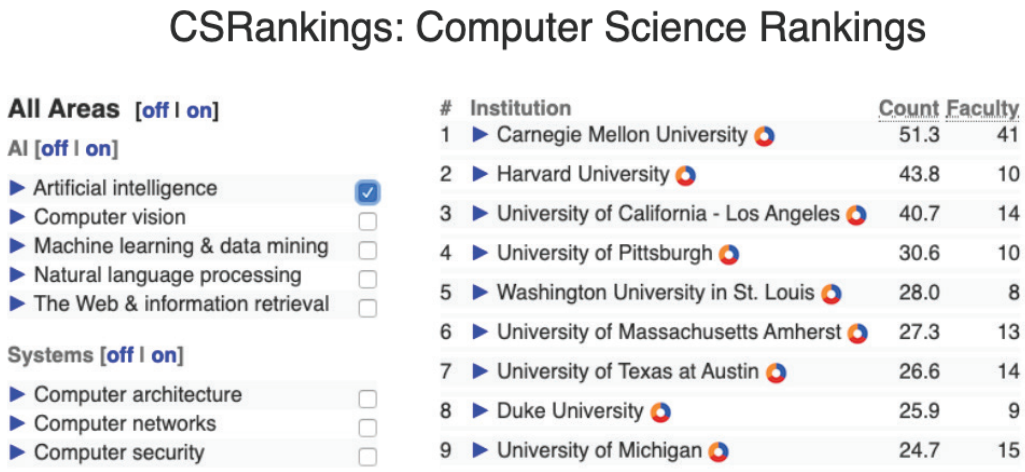
> *sense to aim for a ranking system that is meaningful and transparent. Unfortunately, the most influential rankings right now are those from US News and World Report, which is entirely reputation-based and relies on surveys sent to department heads and directors of graduate studies.*
>
> *By contrast, CSRankings is entirely metrics-based: it weighs departments by their presence at the most prestigious publication venues. This approach is intended to be both incentive-aligned (faculty already aim to publish at top venues) and difficult to game, since publishing in such conferences is difficult. It is admittedly bean-counting, but its intent is to "count the right beans".* ”

CSRankings ranks universities based solely on the number of papers published and the venue of those publications.

Since a paper published in a tier one journal is not the same as a paper published in a tier three journal, the code takes this into account by only considering the conferences which are among the top in the respective domains. For example, only papers published in CVPR[28], ECCV[29], and ICCV[30] conferences are considered in the Computer Vision domain. It also uses an *adjusted count* when there is more than one contributing author so that the credit is divided equally among everyone (ergo more authors does not equal more value). The creator, Emery Berger[31], who is a Professor of Computer Science at the University of Massachusetts Amherst, used data from Google Scholar[32] and DBLP[33] to create this system.

When you navigate to the website, we recommend reading the FAQ and the advice[34] they have for aspiring graduates before looking at the rankings.

Even then, understand that the default rankings are based on *all* domains under computer science. You should deselect them all to then choose the domain of your interest on the left pane and see the results.



Look at the faculty under each university and navigate to their home pages to see the research being conducted.

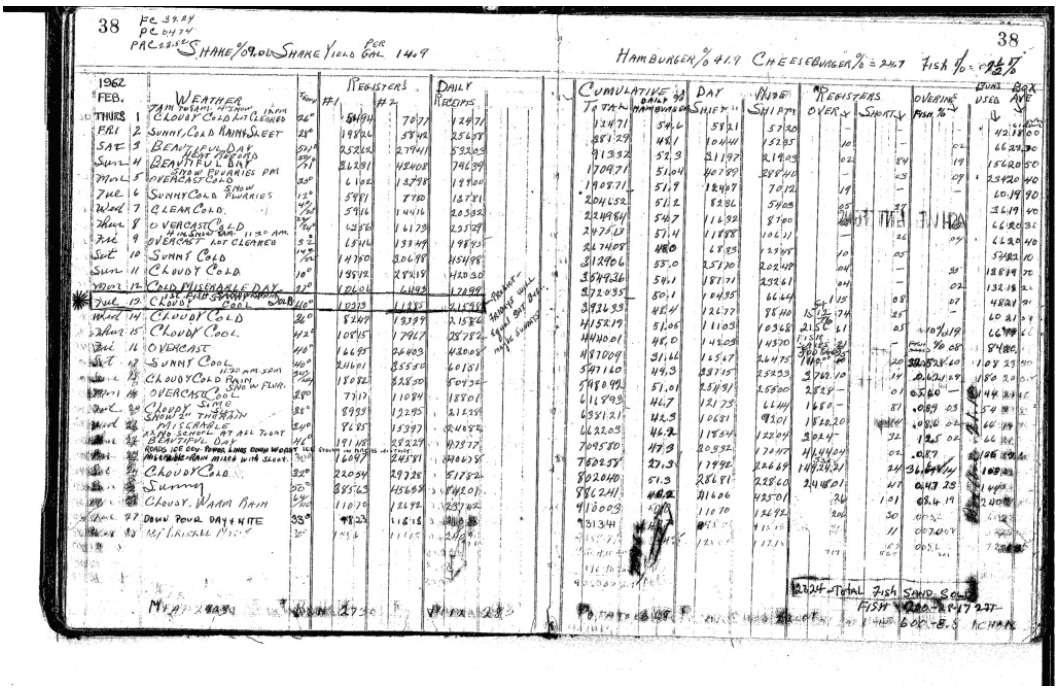
CSRankings is a great tool; but not a flawless one.
As you use it to narrow down your universities, understand that it was still created by people who have biases.

TIME TO DIY

We know this still doesn't answer the question for all of you non-computer science graduates out there. Fret not. There are always different layers of solving an issue.

You might be using novel digital tools today to perform calculations. But have you ever wondered what people used to use before Google Sheets came into the picture? Or Microsoft Office? Or VisiCalc?

Just paper[35].



Good old, plain white paper.

It wasn't pretty, but it got the work done.

Although there isn't a ready-made solution available, you're just a few hours of research away from getting what you need. CSRankings built the ranking system based on data from sources such as Google Scholar and DBLP, which are readily available for you to view. So if you were to do it yourself, first identify the professors whose research you find interesting from your department's research page. From there, you can navigate to the pages of these professors on the aforementioned aggregator sites to gain insight on their present and past work.

STEM CERTIFICATION

Last but not the least, if you plan to pursue your graduate studies in the U.S., please check if your major is STEM certified.

Glad you asked.

Every eligible graduate student in the U.S. gets a **12 month period post degree completion, called Optional Practical Training (OPT)**, to work with an eligible employer and learn on the job[36]. Here comes the best part: If you're an F1 student earning a degree in science, technology, engineering, or mathematics (STEM), you are eligible for a **24-month extension** on top of the 12 months received by everyone.

The Department of Homeland Security (DHS) states that[37]:

> *To qualify for a 24-month STEM OPT extension, an F-1 student participating in an initial period of regular post-completion OPT must:*
>
> - *Have a degree in an eligible STEM field from a Student and Exchange Visitor Program (SEVP)-certified school that is accredited when the student submits their STEM OPT extension application to USCIS.*
> - *Pursue their STEM OPT extension through an employer that is enrolled in USCIS's E-Verify*

employment eligibility verification program.

- *Select a STEM OPT employer that provides the student with formal training and learning objectives.*

- *Work a minimum of 20 hours per week per employer.* ”

At this stage, you should only be concerned about point (a) that says your degree must be in an eligible STEM field from a school that is SEVP certified. If you're wondering how to get that information, you can easily find it on the DHS website[38]. This list is curated by the U.S. Department of Education's National Center for Education Statistics (NCES). This isn't a list set in stone however. They keep updating it and even mention that you can request for a degree to be added by emailing SEVP[39].

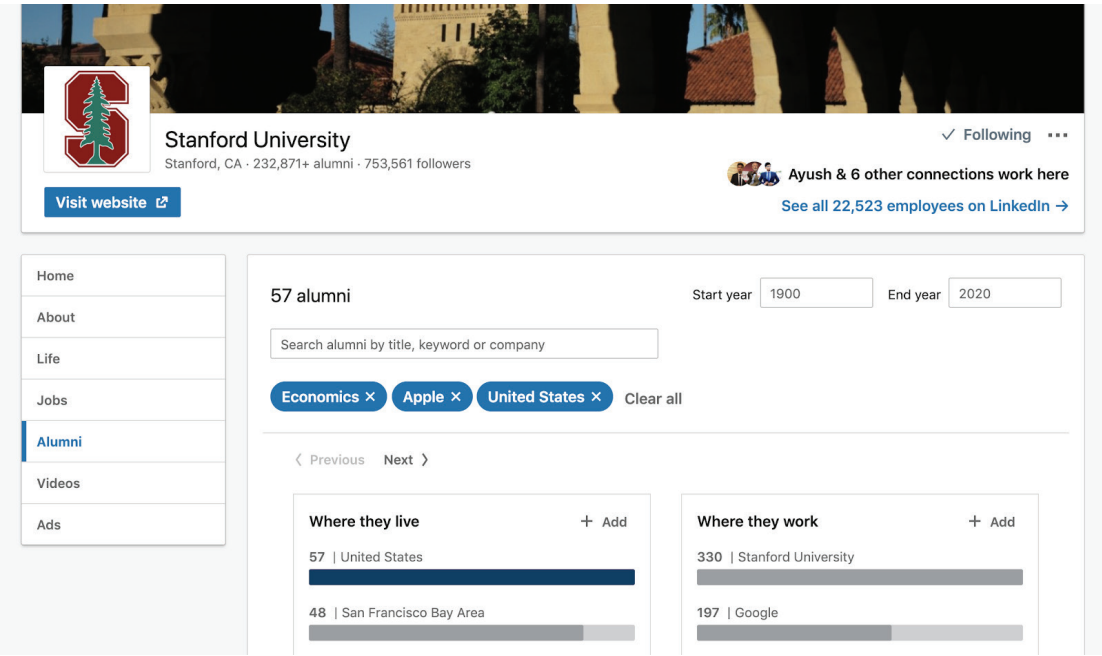
CAREER

In an ideal world, universities would publish information on every alumni's job role, company, and salary in a massive database that can be queried. But in reality, this information is not available to the extent you would want since universities that don't have a great history tend to obfuscate this with less important data. For example, the Management Science and Engineering department at Columbia University does a reasonably good job of giving you all the numbers you need[40]. On the other hand, we couldn't find the data at all for the Computer Science department at Virginia Tech[41]. Nevertheless, your first layer of research should once again begin with your department's website.

Apart from spending time on the department site, we recommend resorting to platforms that pool this information. The professional networking site LinkedIn is your best bet here. We will detail best practices in creating a LinkedIn profile in Chapter 17, but for now, use it to collect data on the alumni.

LinkedIn lets you look at the alumni of any institution and glean some basic categorical information on **where they live, what they do, and what they majored in (among others)**[42]. You can also filter on these fields to, say, look for students who majored in economics at Stanford University and are currently working at Apple in the U.S.[43].

Using LinkedIn, you can reasonably answer the question, *what are some of the common career paths a student follows after graduating from [university] with a degree in [major]?*



To find out details on the salary of a role, you can either use the inbuilt feature in LinkedIn[44] or resort to other platforms like PayScale[45] and Glassdoor[46] that also have this information.

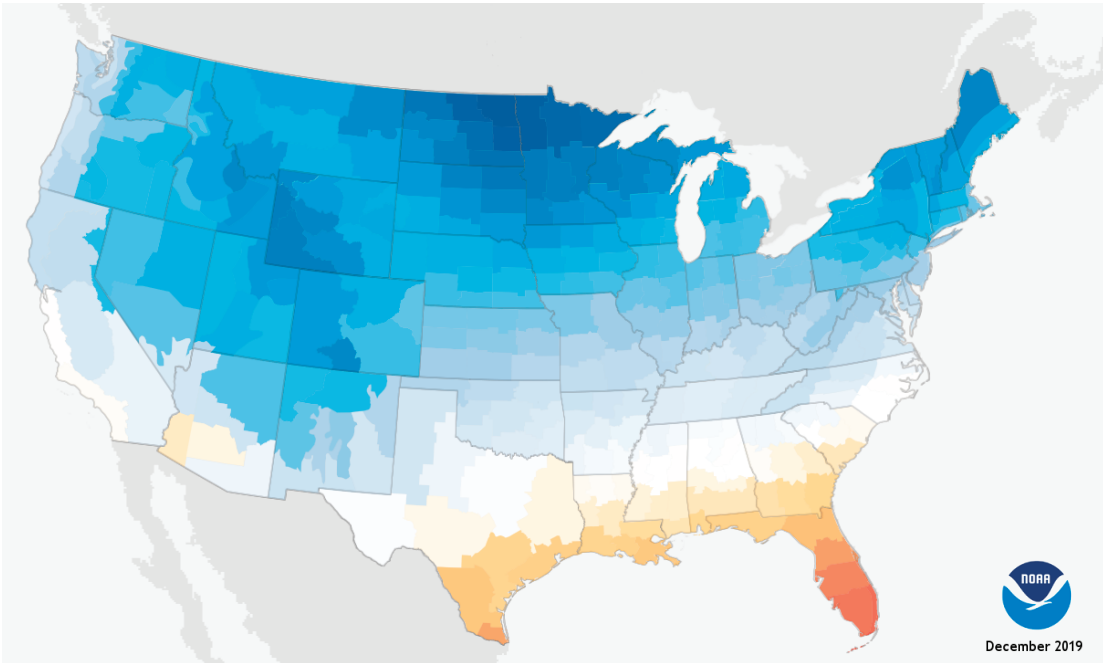
MISCELLANEOUS

This could mean anything. But the most common factors we recommend you look at are the ranking, location, and living expenses.

Ranking, as we saw before, is not the best metric to measure your experience. However, it would be naïve on our part to suggest not looking at it. We recommend triaging your information by looking through the multiple ranking sites mentioned before: QS World Rankings, Times Higher Education Rankings, and the Academic Ranking of World Universities. Rather than looking at the overall ranking of a university, search for the ranks pertaining to your department wherever available.

Location is an important part of your experience. If you're used to living in the city all your life, filled with bustling restaurants and theaters, it would be a difficult transition to study at a university that is situated deep in a rural area, such as Dartmouth College. On the flip side, someone who cherishes peace and quiet would be unnerved with the city that never sleeps, a.k.a New York.

> Another good reason to check the location would be to understand the weather. The weather can go to extremes during winter in the U.S., as seen in the map below for the month of December, created by the National Oceanic and Atmospheric Administration[47]. Note that the temperatures are in Fahrenheit, not Celsius.



December 2019

Average Temperature (°F)

0 50 100

Climate.gov
Data: NCEI

Finally, you can get an estimate of your living expenses by using an online website calculator. At a first glance, the increase in the cost of living will certainly alarm you. In fact, it took me more than a year to stop converting USD to INR every time I purchased food or groceries. We can't stop you from going through that phase, but we can tell you that you don't just have a higher cost of living in the U.S., you will also have a higher salary and benefits. Eventually, it will balance out the cost. For example, there seems to be a 566% increase in the rent from Hyderabad to Seattle for a modest studio spanning 480 sqft[48]. While that estimate is true, it doesn't take into account the difference in average salary between both locations (which is in the order of 400%).

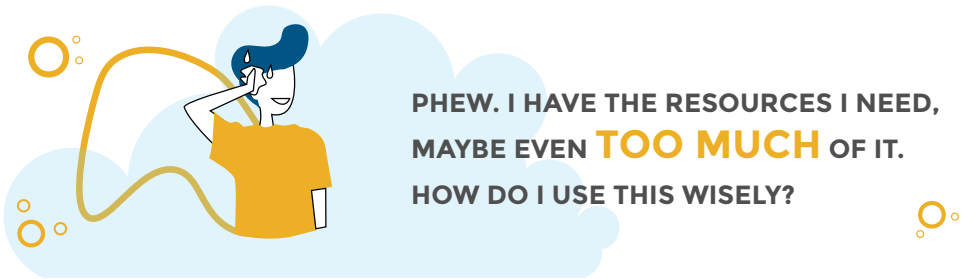
The U.S. is indeed a more expensive country to live in; but not as much as you would think from a first glance.

OTHER RESOURCES

For all the quadrants above, the best way to get qualitative data is to reach out to your seniors and friends who've tread this path already. While reaching out to these individuals, always be respectful of their time. Rather than sending a LinkedIn invite and asking for a 30 minute phone call out of the blue, create a Google Doc with the list of questions you want to ask them and send over the link *after* they agree to help you out. This way, you get your questions answered at a time of their convenience without going through the hassle of scheduling a call (not to mention the ordeal of different time zones).

Because you want to be a satisficer, talk to no more than two current or past students per university at this point.

Another less personal but more time-saving option is to comb through answers on Quora[49] and Reddit[50] which have dedicated spaces for past students to write about their experiences.



We totally get it. Collecting all of these resources sounds like too much of a hassle to apply to universities. You're thinking, *can I not just apply to the top ten universities from QS Rankings for my major?* But remember, we want you to be a *satisficer* right now. We don't expect you to go through every course description in detail and look at all alumni from a university.

All the resources should be used as a way to *eliminate* universities rather than *select* them.

Let's switch back to the example of buying a house. In the beginning, you don't go through every single listing on Zillow in detail and note down the features. Rather, you're simply browsing through dozens of listings to eliminate the ones that *don't* meet your minimum requirements. Which means you first need to create your set of minimum requirements. For a house, that might be the following: *I'm looking for all options that are under the budget of $500,000, have two bedrooms and two bathrooms, and accept a down payment of 15%.*

We humans have gotten really good at making decisions as we evolved, because rather than looking at every single factor involved and optimizing for the best possible outcome, we opt for an approach that only looks at a few factors we deem to be important and attaches appropriate weight to them. Let's do the same for narrowing down universities.

INTRODUCING YOUR BEST FRIEND

Your best friend throughout this journey is not this book. Rather, it is a google sheet titled ***Dream Tracker*** that resides in the Resources folder we gave you access to. You will be using this sheet a *lot* as you read these chapters, so now is a good time to open it and explore the different components inside.

School	Major	Link	Application Deadline	Status	SOP	LOR
School #1	Engg. Management	Add link to the application form for easy access.	dd/mm/yyyy	Not Started	Not Started	In Progress
School #2	Engg. Management		dd/mm/yyyy	Not Started	Not Started	In Progress
School #3	Industrial Engg.		dd/mm/yyyy	Not Started	Not Started	In Progress
School #4	Industrial Engg.		dd/mm/yyyy	In Progress	In Progress	In Progress
School #5	Computer Science		dd/mm/yyyy	In Progress	In Progress	All Received
School #6	Computer Science		dd/mm/yyyy	Almost Comp	In Progress	In Progress
School #7	Mechanical Engg.		dd/mm/yyyy	Almost Comp	In Progress	In Progress
School #8	Mechanical Engg.		dd/mm/yyyy	Submitted!	Complete	In Progress
School #9	Creative Writing		dd/mm/yyyy	Submitted!	Complete	In Progress
School #10	Creative Writing		dd/mm/yyyy	Submitted!	Complete	In Progress

We know it gets chaotic very soon as you begin this process. To alleviate some of that, **we built a tracker** that you can use for various parts of your application: keeping track of applications, letters of recommendation, finances, scholarships, networking, estimating the loan amount, *and* choosing your universities.

If you open the *Choosing Universities* sheet in there, you will see a lot of columns with pre-populated numbers. We pretty much created a column for all the factors we went through so far in the chapter and assigned some dummy values. Now, your job is to turn these dummy values into meaningful scores that will help you make the decision.

		Requirement Satisfaction (Yes/No/NA)			Academia (1-5)			Career (1-5)			Miscellaneous (1-5)			
School	Category	CGPA	GRE	TOEFL	Course Relevance	Research Relevance	STEM Certification	Top Career Paths	Placement Stats	Average Salary	Ranking	Location	What else?	Total Score (on 40)
	Weights				1	1	N/A	1	1	1	1	1	1	
School #1	Safe	Yes	Yes	Yes	3	3	Yes	3	3	3	3	3	3	24
School #2	Safe	Yes	Yes	Yes	3	3	Yes	3	3	3	3	3	3	24
School #3	Moderate	Yes	Yes	Yes	3	3	Yes	3	3	3	3	3	3	24
School #4	Moderate	NA	Yes	NA	3	3	No	3	3	3	3	3	3	24
School #5	Moderate	Yes	Yes	Yes	3	3	No	3	3	3	3	3	3	24
School #6	Moderate	Yes	Yes	Yes	3	3	No	3	3	3	3	3	3	24
School #7	Dream	Yes	No	Yes	3	3	Yes	3	3	3	3	3	3	24
School #8	Dream	No	No	No	3	3	No	3	3	3	3	3	3	24

THE FIVE STEP ELIMINATION

STEP 1: FIRST ROUND

First, we want you to collect a list of 20-25 universities for your major based on information from various ranking sites, seniors, and general research on Q&A forums.

Go through the *Requirements* for each university and populate *just* those columns in the sheet wherever you can.

Once you're done with that, eliminate all the universities where you don't satisfy the requirements. It's okay to keep two or three that you've dreamed of joining, but be sure to mark this appropriately in the *Category* column.

STEP 2: SETTING PRIORITIES

Now, we've got a list of universities you have a shot at (with a few *Dreams*).

Let's take a step back and think about the *most* important thing that you care about for each factor under the quadrants *Academia, Career,* and *Miscellaneous*. The table below gives you an example.

Quadrant	Factor	What Matters
Academia	Courses	I want to study Computer Vision, Entrepreneurship, and Reinforcement Learning
Academia	Research	I want to conduct research on human computer interaction (HCI)
Career	Top Career Paths	I want to become a Product Manager at an AR/VR company
Career	Average Salary	I want to earn $100,000+ so I can pay back my loan within three years
Misc	Ranking	I want my department to be within top 20 in that major
Misc	Location	I want to live in a metropolitan city

You don't have to strictly adhere to the example above and have a requirement for each factor. You also don't need to treat them all with equal importance. Think about which factor matters more to *you*.

For example, If you have always dreamt of living in Silicon Valley, it makes sense to place a higher weight on the location over the ranking.

So write down what matters most in each of the areas and then rank them according to your priorities. Once you're done ranking them, assign appropriate weights in the row titled *Weights* in the *Dream Tracker*. We gave it all a weight of 1, but you should change it based on your preferences.

STEP 3: SECOND ROUND

Now use all the tools we mentioned in this chapter to gather the data you need. Look over the list of universities you have currently and remove the ones that don't satisfy your requirement for each of the areas. For example, if taking a course and eventually specializing in human computer interaction is very important to you, then look at the course catalog and description of each university to eliminate the ones that don't offer it.

If you end up having to eliminate almost all the universities, then revisit the factors and only use the top two or three to eliminate. At the end of this exercise, you should be left with a list of approximately ten universities, give or take two.

STEP 4: ASSIGNING SCORES

Finally, you can begin assigning scores to all the universities under each column. This is part objective, part subjective.

Taking the example of courses once again, dive deeper into the catalogue offered by each of the universities. Read the description, syllabus and takeaways if present. If the university offers specializations, then look through them and find out the ones that resonate with you.

> ! As you're assigning the scores, here's an important tip: **stay away from 3**. Generally when a 1-5 scale is used, the most common response would be 3, since it's an easy way out when you're in a dilemma. However, it will also dilute your response. So, as much as possible, avoid assigning 3.

STEP 5: FINAL ROUND

You have the pre-final list of universities, the weights, and the scores. What is

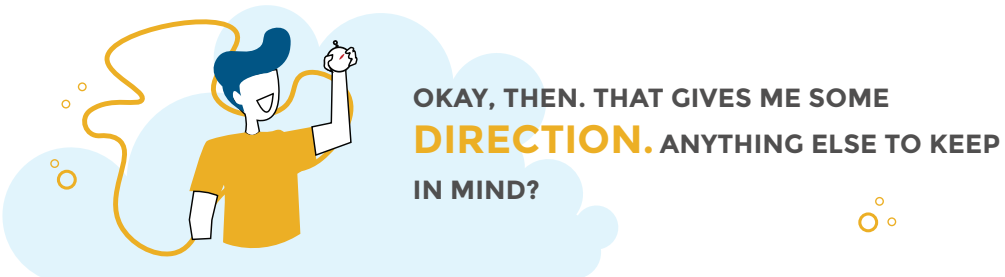
left is for you to categorize each of the universities as *Safe, Moderate* or *Dream*. This should be assigned based on the requirement specified by the university along with its reputation and general knowledge. We all know MIT is better than Miami University.

Once the categorization is complete, pick the top six to eight universities with a split of 1:2:1 (or close) with the *Safe, Moderate,* and *Dream* tag. For example, if you wish to apply to seven universities, then apply to the top two *Safe* ones, top three *Moderate* ones, and top two *Dream* ones.

We recommend not applying to more than eight universities.

Why?

First, finishing an application takes a significant amount of time and effort. Having to do this amidst your already busy life should be taken into consideration. Second, if you picked your universities and chances right, you wouldn't *need* to apply to more than a few to know that you will get into one. Picking fewer will also let you allocate more time per university. Finally, each application carries a fee between $50 to $100. That could add up to over $1000 if you don't limit yourself in this step.



Yes, just one final note! Each university you apply to expects you to submit either two or three letters of recommendation. On average, professors don't give out more than three letters. We will talk in detail about this in Chapter 8, but keep in mind the number of letters you would need as you apply to more universities.

With that, we've reached the end of one of the longer chapters in the book. We will revisit some of the concepts you learned in this chapter once again in Chapter 13 when you're tasked with making that final decision. You will then be immensely grateful to your past self for putting in the work right now. So begin the work needed to make the life of your future self a lot easier.

CONCLUSION

Narrowing down the list of universities is difficult not because of a lack of information, but because of too much of it. This is why you need to follow the role of a satisficer, someone who settles for a *good enough* solution that meets a pre-set threshold. You can be a maximizer when the time comes to pick your dream university.

It is tempting to use ranking as a deal breaker while choosing universities. But, it is *not* a good representation of your experience. There are a plethora of other factors to consider. First, we divided these into four quadrants: requirements, academia, career, and miscellaneous. Next, we gave you the resources needed to obtain information for all these quadrants. And finally, most importantly, we walked you through a five step framework that you can use to do a pretty good job of narrowing down the universities from over 25 to under 8. The most important step here is to write down what matters the most to *you* in each of the factors and assign appropriate priority among them. This entire process should be thought of as one of elimination, rather than one of selection. We will revisit some of these concepts once again in Chapter 13 when you are tasked with picking your dream university.

With so many options out there, you will find it hard to reach a point when you feel the work is complete. That is why it's important to begin with a threshold on the number of applications, either based on financial constraints or other personal factors. If you've followed the structure we've detailed in the chapter closely, we can assure you that you can't go wrong.

A LITTLE REFLECTION

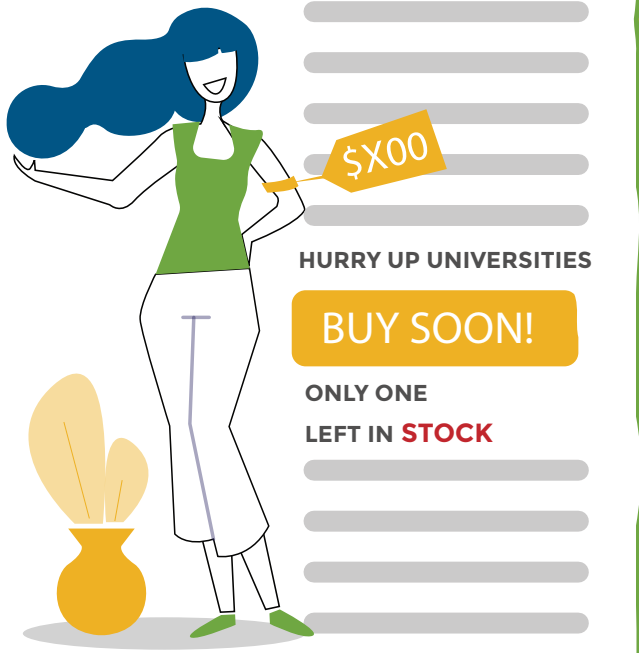
- When was the last time you were a maximizer? A satisficer?
- What are the top three factors that matter the most to you during your graduate school experience?
- What are the top three factors that matter the least to you during your graduate school experience?
- Who are five seniors you can reach out to from different universities to get valuable insights?

Chapter

06

CRAFTING YOUR RESUMÉ

Time to sell yourself
on a piece of paper



A resume needs to be a living breathing document of who you are, what you've done, and what you hope to do. We know, that's a lot of pressure. That is why, in this chapter, we will be guiding you through the process of constructing a resume step-by-step.

Ah, the mighty tale of a resume—which means *summary* in French—goes back more than 500 years to 1482 when Leonardo Da Vinci wrote the first professional resume[1]. Of course, back then it was a mere description of what he did in the years 1481-82. There was a long period of dormancy for the next 450 years, and then the concept got picked up again.

By the 1950s, resumes became mandatory and included information on height, weight, marital status, religion, and even the number of kids one had[2]. It was a balance between a person's personal and professional history.

Fortunately, in 1965, the **Equal Employee Opportunity Commission (EEOC)** was established in the U.S. to prevent employers from discriminating against candidates based on their race, color, religion, sex, nation of origin, age, disability, and genetic information (including family medical history)[3].

In short, it was to prevent companies from discriminating against you based on anything but your skill and past experiences.

At first, resumes were written on scraps of paper over lunch as a form of introduction. However, with time, owing to the introduction of word processors and typewriters, they began adopting a more slick and standard format. The arrival of fax machines in the late 80s dramatically changed the way resumes were sent. What took days to be sent by post could now be sent in minutes[4]. Then the internet and email came along to make this even easier. There was a brief period when some people thought that resumes would go out of style, but that could not be farther from the truth.

Resumes might have changed in form from a lunch-time hobby to a highly standard document, but their relevance has stayed the same, if not more pronounced with time.

A resume, today, is seen as a marketing tool where *you* are the product you're selling. It needs to be attractive, structured, and well-tailored. It is more important to *exclude* things than to include them in a resume, since it cannot span more than one page or look like a condensed ancient Indian scripture[5].

A resume is meant to be a *summary* of your education, work experience, and skills, and not the entire gist of it.

And according to an eye-tracking survey by Ladders Inc.[6], you only get 7 seconds to impress someone who reads it. So, how do you want to leverage that?

We highly recommend you do this exercise with us as you're reading this section.

First, there are two formats to choose from: the *chronological resume* vs the *functional resume*[7]. The **chronological resume**, as the name states, lists your past experiences starting from the most recent one. This is the format that is used by most candidates and preferred by most universities and companies. The **functional resume** highlights your skills and accomplishments, and is used by people who want to switch career fields. We advise you pick the former.

Assuming you go ahead with the recommended chronological resume, you can choose either a *one-column* or a *two-column* format[8]. We've provided structural samples of both to show the differences.

ONE-COLUMN RESUME FORMAT

FULL NAME

Contact | Address | Profile

Education

Experience

Projects

Skills

Volunteering/Awards

TWO-COLUMN RESUME FORMAT

FULL NAME

Contact
Address
Profile

Education

Skills

Awards

Experience

Projects

Both the formats have their pros and cons. A **one-column resume** is more ATS-friendly (which we'll get to soon), suffers less distortion when converted into a PDF, and is considered the more acceptable format. However, it is not optimized for space, contains long sentences, and is not appealing to the eye. The **two-column resume** is newer and more reading-friendly. It lets you separate the less space-consuming sections such as *Education* and *Skills* from the more verbose *Experience* sections. However, it is less likely to be ATS compatible.

Of course. ATS refers to ***Applicant Tracking System***. It is a tool used by companies, and more specifically recruiters, to manage the thousands of resumes that come into their pipeline, by parsing the resume's content for relevant keywords followed by sorting and ranking them into different categories[9].

If you were applying for a data science role that specifically states that you need a background in Python, R, and Machine Learning, it's pretty obvious that the recruiter would only want to look at the resumes that had them. However, instead of having to skim through all of them manually, they let the software do its magic, which then provides them with a ranking of applicants (based on a plethora of indicators).

ATS: A BRIEF HISTORY

ATS is a quintessential example of the phrase *necessity is the mother of invention.*

As mentioned before, the advent of personal computers, word processors, fax machines, and the internet over the decades made it exponentially easier for job seekers to create and send resumes. Not surprisingly, as their task became simpler, the employers' task in choosing a candidate for the job became harder.

Until the 1990s, recruiting happened primarily through classified advertisements in newspapers, but this changed dramatically as we entered the 2000s. An early version of the ATS began to take shape in a website based out of Canada[10]. Before we could reap the benefits of the internet though, there was the infamous dot com bubble collapse[11]. Within a few more years, there was the housing collapse[12]. All this meant the number of unemployed around the world skyrocketed in a short amount of time.

So what did they do to find jobs?

They flocked to job boards such as Monster and CareerPath which were already seeing steady growth.

This surge of growth left the job boards blindsided, paving the way to an accelerated adoption of the ATS software, which is **now used by over 95% of the Fortune 500 companies**[13].

And somewhere along all this, the need to mention your race, height, weight, and more in your resume lost its significance. Fortunately.

We tell you all this so you know that the ATS is here to stay.

THE TWO-COLUMN RESUME

Let's begin constructing a two-column resume from scratch. If you choose to go for a one-column resume, you can still use all the best practices provided below since the difference between the two is more structural than

functional. We're going to pick a two-column resume format created by Debarghya Das[14] and taken from Overleaf, a website that lets you use ready-made templates and customize them in LaTeX (pronounced lay-tech).

LaTeX[15] is a document preparation system that is generally used for technical or scientific documentation writing. Unlike a word processor, it lets you focus more on the content of a document and less on its appearance, which is taken care of by it by assigning default values.

You can either pick the template we chose, or pick something else to your liking, and follow along. The following are the five major sections of the resume:

- Contact
- Education
- Work experience
- Skills
- Extracurriculars/Volunteering

Are you ready with a fresh template opened up in front of you? Let's begin!

CONTACT

In my junior year, I used to think contact details meant I needed to include my name, date of birth, sex, full address, father's name, mother's name, and *more*. These were the days when I was still under the presumption that a resume spans four pages.

I've grown up a lot since.

Contact details only mean **five things**: your full name, professional email address (no more *poojavictory* or *iamcoolguy*), phone number (with the appropriate country and area code), short address, and a link to your LinkedIn profile.

If your LinkedIn profile link is too long, first customize it by navigating to your profile and clicking the *Edit public profile & URL button* on the top right corner[16]. Since two people cannot have the same public URL, this is a first come first serve feature. If you are not able to create something short, use a software that will help you shorten and customize URLs[17]. We recommend this because sometimes the recruiter might *print* out your resume as opposed to viewing it digitally.

After you're done, it should look something like the following:

Neel Sharma

neel@gmail.com | +91 99999 88888 | No. 123, Nice Apartments, Good City, TN 600001
neelsharma.com | linkedin.com/in/neelshaarma

Although LinkedIn has become the Facebook of professional networking, you can go above and beyond by adding profiles from other reputed websites such as GitHub, Research Gate, or link your personal website which can act as a hub for all of the other sites. Tools like Squarespace and Wix have made website creation downright simple. If you plan to limit it to just your LinkedIn profile, ensure that it is up-to-date and complete (which we'll help you with in Chapter 17).

It might also be time to clean up your social media in general, seeing how the U.S. has made it a mandate to screen all applicants based on their online history[18].

EDUCATION

We've noticed that people outside India tend to have a narrow view of the universities in India. They have heard of the IITs... and that's pretty much it. However, don't be alarmed by this. The people who read your applications are used to viewing *and* admitting students from colleges belonging to all tiers, as visible from the undergraduate institutions represented at Harvard Business School[19].

This section is to give the admissions committee an idea of not just where you come from, but also how well you've done academically. To do that, include the following fields:

- University name
- Degree and major (mention minor if any)
- Graduation month and year
- Location (follow *city, state* if it was in the U.S. or the country that you're applying to. For places outside, best to mention *city, country* since the admission committee wouldn't be familiar with your state)
- CGPA (optional: some students also mention a *major* GPA for subjects that are directly related to the major)
- Other distinctions (Top 5% in class / Top Ranker / other department specific awards)
- Relevant coursework (mention not all, but only the top 5-10 relevant coursework)

Below is an example of education and coursework:

EDUCATION

NIT TRICHY
B.Tech in Computer Science
May 2019 | Trichy, India
Top 5% in Class
Cum. GPA: 9.75/10.00

D.A.V. GOPALAPURAM
Major in Computer Science
May 2015 | Chennai, India
Top 1% in Class
Cum. GPA: 10.00/10.00

COURSEWORK

UNDERGRADUATE
Information Retrieval
Operating Systems
Artificial Intelligence
Functional Programming
Computer Graphics
Computer Vision
Unix Tools and Scripting
Behavioral Economics
Intro to Psychology
Financial Management

As you can see, the same format can be followed for details of your high-school.

WORK EXPERIENCE

So far, you gave the reader an idea of where you studied and your tactfulness in creating email addresses (among other things). Now we come to the crux of the resume: your experience.

Experience should take up about 30-40% of your resume's real estate, for good reason. This is where you compress many months (or even years) into a few inches of paper.

For those of you who are applying right after your bachelor's, ensure to list all your internships *and* relevant academic projects. For those of you who have a few years of experience under your belt, use your best judgement in cherry picking the internships and projects you want to include. Relevance is key here.

Each experience should have the following fields:

- Company/university where you work
- Title
- Duration of internship/work
- Location (follow *city, state* if it was in the U.S. or the country that you're applying to. For places outside, best to mention *city, country* since the admission committee wouldn't be familiar with your state)
- 3-4 bullet points of the amazing work you did:
  - Include action verbs: *Spearheaded, Researched, Developed, Built, Streamlined, Improved, Lead, Served*, etc
  - Include numbers to show impact: *time, money,* or *other valuable resources saved*
  - Include any programming language or software you used and learnt
  - Finally, include the end-result of the internship if it resulted in a form of recognition: writing a paper, presenting at a conference, winning a hackathon, etc

Below is an example of a university experience:

UNIVERSITY OF MICHIGAN | S.N.BOSE RESEARCH FELLOW
May 2018 – Aug 2018 | Ann Arbor, MI

- Researched computer vision applications in low-cost unmanned aerial systems
- Developed Alta-02, an on-board target recognition system using Python and OpenCV
- Improved accuracy of recognition by 30% and submitted paper to IEEE

If you interned at a university (or company) for more than three months and have a lot to show, it's okay to extend beyond 3 bullet points. As a general rule of thumb though, we recommend you follow the *rule of three* whenever possible.

Below is an example of a company experience:

GOOGLE | Associate Product Manager
Jul 2019 – Present | Bangalore, India

- Captured customer needs, product scenarios, and user stories to improve upon the version 1 of Google Lens
- Collaborated with sales and marketing to launch Google Lens v2 with 50 million MAU (Monthly Active Users) and 70% retention
- Working to create a roadmap to launch a premium version of the product

Use the same principles mentioned before, but make sure to include keywords that are relevant to the degree you're applying for. If you're aiming to get into an Engineering Management program, having a product management background helps since many of the alumni have gone that route (including yours truly). Even otherwise, it shows them that you've worked with people to solve problems in a manufacturing or management setting.

For any papers you mention in this section (or under relevant projects), ensure to cite it at the end of the resume using the APA format[20] (below is the *apalike* format from LaTeX).

PUBLICATIONS

[Saqi et al., 2019] Saqi, M., Khan, S., and Sharma, N. (2019). A study on detecting drones using deep convolutional neural networks. *IEEE AVSS*.

We trust you will fill the rest of this section with your experiences before moving on to the next.

SKILLS

It's time to put to paper all those sleepless nights spent on Coursera learning to code and on studying to get the Agile certification.

In this section, include all the software, languages, and certifications you have earned over the past few years.

Once again, the skills you put down need to somehow relate to the degree you're applying to. While getting an Agile certification is helpful if you're going the program manager/project manager route, it doesn't seem too relevant for a master's degree in robotics. For programming languages (and skills in general), it's useful to mention the proficiency level along with the skill. It is near impossible to know multiple skills with the same level of proficiency (kudos to you if you do!). So use one of the following ways to distinguish between your skills:

- Proficient / Intermediate / Beginner
- Lines of code: > 5000 / > 1000 / < 1000
- Programming Languages / Software / Certifications (if you have skills in all three areas)

Below is an example:

SKILLS

PROGRAMMING

Proficient:
Java • Shell • Python • Javascript
OCaml • Matlab

Novice:
C • C++ • CSS • PHP • Assembly

Software:
Tableau • GAMS • Jira

Do not fret if you don't have enough skills to mention. For non-coders, it's worth mentioning proficiency in languages (German, French, etc), soft-skills (Project Management, Agile Methodology, Scrum Certification, etc), and other interests (non-fiction writer, district level chess player, touch typing 80

wpm, etc). These skills are in no way trivial or irrelevant. In fact, I still have *non-fiction writer* and *badminton player* on my resume.

Maybe it's time to remove the latter.

So, dig deep into all the activities you did over the past 4+ years, and we can assure you that things will begin surfacing.

EXTRACURRICULARS

Ah, finally we arrive at the fun part! This is where you get to include all the clubs, organizations, and festivals you were a part of. This is an important section of the resume. Why?

Extracurriculars signify that you actively took time out of an already busy schedule to contribute towards societal good.

Even if you were part of half a dozen communities, limit this section to a maximum of three experiences. In terms of things to include, this follows a very similar approach as your *Experience* section.

EXTRA-CURRICULARS

3D AEROMODELLING CLUB | VICE PRESIDENT
Jul 2017 - Jul 2019 | Trichy, India

- Led 20 members to work on 6 projects in a two-year span.
- Participated in 5 contests and bagged 1st place at IIT Mumbai's tech-fest twice.
- Organized a workshop every semester to a total of 500 students.

It's still advisable to use action verbs, mention numbers, and any competitions that you were a part of, or events that you organized for the wider community.

One section that we didn't explicitly mention above is the *Awards*. This is optional based on whether or not you've received them. For those who have bagged awards academically and/or otherwise, ensure to include a maximum

of five either on the right or left (depending on the space left over and assuming you're using a two-column format).

AWARDS

2019	National	S.N.Bose Scholarship
2018	1st/50	Microsoft Coding Competition, Bangalore
2018	National	Cargill Global Scholarship
2017	Dept. Topper	Certificate of Merit

More often than not, the admissions committee wouldn't have heard of the country specific or state specific awards. So ensure to include the *integrity* of your award by mentioning the number of total participants or the level of locality of the award (national vs international).

With that, we're done with building the resume. Now, there's one final task before you can call this complete: making it ATS friendly.

ATS BEST PRACTICES

Given how pervasive the ATS has become, it's highly recommended that you follow the do's and don'ts laid out below[21]:

- **Do** have long-form *and* acronym versions of keywords (e.g. Master of Science (MS) or Machine Learning (ML)) for maximum searchability
- **Do** use traditional resume fonts such as Helvetica, Arial, or Georgia
- **Do** use standard resume section headings (e.g. Work Experience, Education, Leadership Experience, etc)
- **Don't** use headers or footers as the information might get lost or cause a parsing error
- **Don't** use tables or columns as they often cause a parsing error
- **Don't** save your resume in formats other than .docx or .pdf

Most importantly, when you begin applying for a job or internship, plug in keywords relevant to the role so the software can pick up on it[22].

ATS might have made your job harder by making you more mindful of the content. However, you can use this knowledge to be smarter and reverse engineer it.

LET SOFTWARE DO THE WORK

Now, if you're wondering, *is there not a tool that does part of the work for me?*

The answer is a resounding yes!

Although we recommend crafting the resume yourself to get experience with LaTeX, you *can* use a tool that will simply take in the input and spit out an ATS-friendly, good-looking resume. One such tool is **ResumePuppy**[23]. It was founded by Saiman Shetty[24], an *Einstein Visa* recipient and a veteran product manager from Tesla and Lyft, and Anish Hegde[25], another product expert from Yahoo and Signeasy. ResumePuppy is similar to Overleaf in its functionality, but has a more user friendly interface.

Instead of letting you edit a LaTeX template, it lets you input content into pre-set fields under various sections of a resume. As of now, there is only one standard ATS-friendly template you can use for building your resume, but they are growing rapidly and have plans to add more features soon.

Glad you asked! We highly recommend following the design principles stated below:

- Do not go below font size 10.5. Ensure that your name is bigger than your headings than your paragraphs (ideally, follow the format 24 -

12.5 - 10.5 and bolden your headings).

- Use one of the more well-known fonts such as Helvetica, Ariel, or Georgia (*sans serif* fonts are more suited for a digital resume, whereas *serif* fonts like Times New Roman are better for paper resumes).
- Add strategic lines to partition your Resume well. It's recommended to add one below your name/contact details, one between various sections, and one to split the two columns (for a two-column resume).
- Strictly adhere to margins to ensure it looks neat. The recommended size is between 0.5-1 inches.
- Stay away from using colors if you can. Sometimes, things should remain black and white.

We don't particularly recommend adding a summary at the top as it can seem redundant. However, if you have a catchy two-liner that you're itching to include, we won't stop you.

Hopefully that gives you enough guidance to craft your resume. If you want to look at the complete resume that we were building in this chapter, head over to the Resources folder and go to the *Sample Resumes* sub-folder. Along with the two-column resume, there are other formats available.

You can also read more comprehensive articles on this topic[26][27] if you are looking for more inspiration. Now, put all this into practice and build your one page marketing tool.

STUDENT TESTIMONIALS

A resume is the first document that showcases your designing and organizing abilities. I created my resume in photoshop. I believe using non-traditional software like photoshop to create a resume showcases uniqueness in thought process and can be useful especially if you're looking to work in the domain of design.

I found many pros to using photoshop: a) you can create a color palette that brings out the kind of person you are (for example, blue equates to calmness), b) you can create guidelines and highlight the content you want on the page, c) you can create layers such that edits can be made to parts of the resume without impacting the rest of the content. Overall, there are many commands that can be useful in showcasing your experiences and skills.

- Vishal Kothari, The University of Texas at Arlington

I read a few sample resumes oriented towards graduate studies online. I stuck to using only two bullet points under each of my experiences, mentioned the courses that seemed directly relevant to the program, and kept the length to a single page. I also focused on the sentence structures for each bullet point so that every word counted.

What really helped was sitting with a friend of mine who was also applying for his master's degree and editing our resumes together. Having more than one person review it goes a long way.

- Om Vaghasia, Columbia University

CONCLUSION

Resumes have certainly had a long history. Beginning with Leonardo Da Vinci, they have gone through various stages: a lunch-time hobby on a scrap of paper, a typewritten document with unnecessary personal information, and now a highly customizable marketing tool. It is one of the first things that is considered by the admissions committee and contains all your details put forth in a lucid manner. In this chapter, we took you through the process of creating one from scratch.

First, choose between the one-column and two-column format. One-column is more ATS friendly and two-column is more reading friendly. The *Contact* section should have a clean email address, LinkedIn profile link, and preferably a personal website. The *Education* section should portray your academic caliber and relevant coursework. The *Experience* section, which takes around 30-40% of the space, should condense your internships and projects. *Skills* is best used to talk about your knowledge of various software, programming languages, and unique skills (are you a tennis state champion? Be sure to add that!).

Coming to the more fun sections, *Extracurriculars* is for you to show your involvement in organizations and societies. This section signifies your ability to be a team player and a valuable social member. Finally, there is the optional *Awards* section where it would be a good idea to include the number of participants and the level of locality of the award.

Once you're done creating your resume, use the ATS best practice to ensure you outsmart the software and the design best practices to make it *look* good. If you don't feel like creating your resume from scratch, use a website like Overleaf, and customize one of their preset templates. It's also a good way for you to learn LaTeX. Now go ahead and create an eye-catchy one-page marketing tool.

A LITTLE REFLECTION

- Which template did you go with? What made you choose that?
- Which was the hardest section to write in this Resume? Why so?
- If you only had three lines to summarize your career objective, what would those be?
- Are you happy with the final product?

Chapter

07

WRITING YOUR

STATEMENT OF PURPOSE

Time to make space for
all the crumpled papers

Peter Wason[1], a renowned cognitive psychologist, conducted an experiment in the 1960s, now popularly known as the *Wason Rule Discovery Test*. Let's briefly go through it.

At the beginning of the experiment, the participants were told that the experimenter had a *rule* in mind which applied to number triplets (for example, the rule could be *prime numbers*, in which case an example triplet is 3-11-17, or 79-139-191). The experimenter gave the example **2-4-6** as a triplet that followed this rule. The participants then had to correctly guess what the rule was by proposing their *own* triplets and getting feedback on whether or not those followed the rule. There was no limit on the number of triplets the participants could propose to get feedback on.

Take a moment and think about what triplets you would have proposed if you were a participant.

4-6-8? 1-3-5? 50-100-200?

If you thought of any of the above triplets, then good news! They *all* follow the rule. Yes, all of them. Now, what could the rule be?

Pause for a moment and formulate a possible rule in your mind before looking at the answer below.

The rule that the experimenter had in mind was the following: any triplet with an *ascending* sequence. In the experiment[2], "*Six out of 29 subjects reached the correct conclusion without previous incorrect ones, 13 reached one incorrect conclusion, nine reached two or more incorrect conclusions, and one reached no conclusion. The results showed that those subjects, who reached two or more*

incorrect conclusions, were unable, or unwilling to test their hypotheses." In a famous video simulating the experiment, you can see participants trying to continuously prove a hypothesis they had formed initially, even when the experimenter kept giving feedback that disproved it[3].

> If you had also proposed an incorrect hypothesis, there's a good chance you might have been a victim of **confirmation bias**[4], our tendency to strive to *prove* our hypotheses, instead of *disproving* them.

To test the hypothesis, I played this experiment with a few of my friends and they *all* continued to prove their hypothesis even when I told them it was not right. Before reading any further, why don't you test this with someone who is next to you right now? Seeing it in action will help you grasp this idea better.

COGNITIVE BIASES AND YOU

Confirmation bias is one of the cognitive biases.

Cognitive biases are unavoidable blind spots that lead you to quick, but faulty, decisions.

In the millions of years that our brain developed to become the powerful machine it is today, we fell prey to a lot of cognitive biases that helped us survive a particular period of time. The negativity bias, for example, helped our ancestors be vigilant to the dangers they faced during the hunter-gatherer era[5]. Although some of them are not needed anymore, they still persist and are hard to escape.

Wikipedia lists over **175 biases**[6] that plague us, ranging from **confirmation bias** to lesser known ones such as **hyperbolic discounting effect**[7], a tendency to have stronger preference for immediate payoffs over future payoffs.

While we can get better at noticing these biases as we experience them, there is no escape.

Not for us, you, or the admissions committee.

While going through hundreds of applications, it is highly likely for the committee to experience a few biases[8].

One example is **conservatism bias**[9], also known as belief revision bias. It states that when we are presented with new information on a topic we're already familiar with, we tend to associate lesser weight to this new information compared to the original information. Generally, admissions committees tend to screen applicants first based on quantitative data such as CGPA and GRE scores. By the time the committee reaches the statement of purpose, their thinking is biased by the grades of the applicant.

However, biases are not always bad.

The same committee that suffers from conservatism bias, also suffers from **salience bias**[10], a tendency to focus more on things that are emotionally striking. Or the **bizarreness effect**[11], a tendency to remember bizarre events more than common occurrences. You could use that to your leverage and include an interesting and vivid story from your past that is sure to be remembered. Whether good or bad, we mention these so you understand that it is not a straightforward, objective process.

Understanding others' cognitive biases is useful;
However, it is critical to know that it's *not* under your control.

What *is* under your control is writing a stellar essay that conveys your motivation to study abroad.

As mentioned in the prologue, you spend the greater part of your childhood swimming in a metaphorical river, constrained by the rules set in place by the government, society, and your parents. You get some breathing room to dabble in your interests when you enter college. Now, as you enter graduate school, you will have even more space to craft the path of your career and contribute to the broader community.

With more space, comes more uncertainties.

The committee needs to know that you have a focused purpose that will shield you through all the uncertainties. The statement of purpose is your chance to convey that purpose. **It is a statement of your purpose.**

We will be honest: we don't know. We approached Ross Gortner, Associate Director of Engineering Management, at Dartmouth College[12]. This is what he had to say:

> *"In the statement of purpose, I'm looking for the answers to two basic questions: who is this person and what is their*

story. The essay should talk about where you want to go from where you are presently and how this particular program will act as a bridge for you.

Another important factor that I look at is whether you talk specifically about the university's capabilities and whether you have done your research to understand why you are applying to this program. I expect an applicant to provide a customized essay over a generalized one for the universities they apply to.

I first scan through the SOPs and check if most of the aspects are covered, and then spend more time on the selected ones. I read through all of them but would give more importance to the ones that are concisely written after distilling one's thoughts. Overall, I want to perceive how interested the student is in this program. ”

In general, there is a lot of content on the web around this topic[13]. Some ask you to include interesting anecdotes while others suggest using this space to offer explanations on another part of your application (such as a low CGPA). We distilled all the information out there to present the *five* questions we feel you definitely need to answer in this essay. To make it more actionable, we have given examples from well-written essays at the end of each question.

Before we jump into all that good stuff, here's a mantra to keep telling yourself as you write this essay: *the statement of purpose is a place to talk about topics that are* not *evident from other parts of the application.*

WHY THIS MAJOR AND UNIVERSITY?

Answering this question takes a non-trivial amount of effort.

Here are **two things to avoid** while answering this question: First, don't assume it is obvious to the admissions committee that you are pursuing a graduate degree in computer science because your undergraduate degree was in computer science. Second, don't search for the most recently published paper on the department's website and include that as the reason you wish to pick the university.

Making the above errors indicate that you are lethargic and put little thought into this.

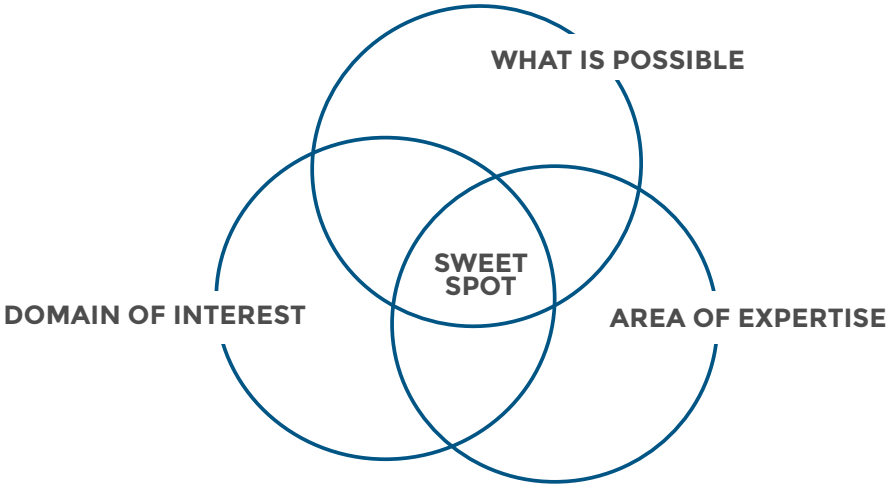
> *"You should not try to answer this question alone. You should start off by collecting research guides (or brochures or summaries) from the different departments where you will apply. You'll look through these things and you'll find summaries of ongoing research in the different areas that [that school] offers. You'll find a few projects (and possible faculty advisors) that interest you, and you will ask yourself this question: "If I worked in this [area], and if I worked on chunks of these projects, what would I try to do on my own?" The answer to this question should form about a third of your Personal Statement."*
>
> *- Professor, Georgia Institute of Technology*[14]

The admissions committee generally uses the statement of purpose for a few reasons:

- To weed out anomalies, such as students who claim they're pursuing graduate studies because their parents asked them to or students who have extremely poor writing skills (which we'll talk about soon)

- To gauge the interest of the applicant *and*
- To potentially match the student with a faculty from the department.

While it's understandable if you don't end up pursuing exactly what you stated in your essay, there needs to be a strong correlation or reason for you to have digressed. For those reasons, it is highly recommended that you do your due diligence in understanding the boundaries of what research is *possible*, what interests you, and what you have experience with from your undergraduate degree before answering this question (or choosing the major and university).



[paraphrased] Throughout my undergraduate studies, I've been fascinated by solving problems that are an amalgamation of business and engineering principles. I've focused my coursework on two key pillars of the program—operations research and information systems. Within operations research, I have a strong foundation in probability and statistics, optimization and stochastic modelling. I've not only performed well in all classes, but also applied the concepts learned in real world situations. For example, I led a small team of two students to determine the outcomes of possible breast cancer screening policies (e.g. annual,

> *biannual, every three-year mammography). We built a decision tree (with 3 health states and 3 different screening policies over a 10-year period). Based on analysis of the tree, the optimal screening policy was determined. [...] My undergraduate education and abundant internship experiences have shown me I have the strong quantitative and qualitative skills necessary to thrive in all the core courses and electives in the IEOR department and the business school at Columbia. I believe these factors would enable me to excel in Columbia's Management Science and Engineering (MS&E) program.*
>
> *- Graduate Student at Columbia University*

WHAT DO YOU WANT TO SPEND THE TWO (OR FIVE) YEARS ON?

Graduate school is not easy, to put it mildly. You are putting yourself through financial debt, cultural transformation, grueling hours of schoolwork, and possibly developing an **imposter syndrome**[15]. All in the hopes of getting a job that will pay off for all your hard work.

What is it that motivates you to go through this?

What questions are you trying to answer?

What ideas have constantly knocked on your mind imploring you to explore further?

Note that this question is *extremely* important if you're applying for a doctorate degree, which stretches on for five years or more. Nevertheless, even for a master's degree, you need to have an idea of the research that you want to pursue.

> *It is best for both the department and the student if there is some match between the student's interests and the department's research projects. It is a good idea to do some research on each graduate school's research projects and tailor your personal statement accordingly. Statements that praise our department on its excellence in a topic where no current research is going on raise a red flag to the committee and these applicants are generally rejected.*
>
> *- Professor, Georgia Institute of Technology*[14]

This ties into what we mentioned for the previous question. Unless they see a fit between your interests and what *they* can offer, they would not be motivated to pick you. This question is also a place for you to go back and write down all the questions that have grabbed your attention while you were running a model simulation during your internships or sitting through a powerful presentation at a conference.

Elucidate how you plan on getting these questions answered during your graduate school either by working under a professor's wing or by leveraging the industry partnership program at the university (or both).

> *One of these days, while I was trying to implement a self organizing map, I wondered if a hardware implementation of the neuron exists. Isn't the massively parallel architecture of the brain the reason behind its ability to process petabytes of data daily and swiftly? Google eventually gave me something: a silicon brain project, a chip that mimics the neuron; but I didn't get as many search hits as I would've really liked. [...] The brain's processing needs to be simulated using a new architecture that is vastly parallel like the neural mesh of the brain itself. Has it*

> *already been simulated like this? I need more knowledge on the subject to answer such questions. This thought is only related to a subset of the vast subject that is Artificial Intelligence. There is so much still to do in Artificial Intelligence that Russell and Norvig in their book "Artificial Intelligence: A modern approach" state that "several full-time Einsteins" can work on it! I want to be part of the academic community diving into Artificial Intelligence.*
>
> *- Doctorate Student in Computational Neuroscience*

This stellar essay, along with many more, can be found in the Resources drive.

DO YOU HAVE THE REQUIRED EXPERIENCE?

The nail in the coffin for the two questions above is your response to this one. Expressing your interest in a topic that is being worked on by the university would bear no fruit if you don't have *some* relevant experience already in the said topic. A best-selling author does not start out asking publishing houses to look at her manuscript without spending years conducting painful research and writing relentlessly.

You need to show tangible work you did, *along with* the results.

> *"We have admitted some students because of projects they talk about in the SOP, but we want to see results (publications, etc.) and what the faculty letter-writers have to say about it. The SOP itself is not driving this evaluation but may help to put what you have done into context for us. The SOP is your chance to tell us what you want to do (at this point) and why, and to put all the other information in the application into some sort of contextual or narrative*

framework that helps us make sense of what you have been doing. ”

- Professor Emeritus, CMU[13]

We understand that not everything you have worked on in the past might be relevant to your future; at least not directly. That's completely fine, as you can see from my own story. The admissions committee understands that students like to explore their interests and dabble during their undergraduate degree to find their passion(s), so to speak. While they're okay with a student not having multiple relevant experiences, they do want to see someone who has taken things to the finish line before.

Have you published a paper?

Did your team get to the final stage of a hackathon, maybe even win it?

Were you the founder of an organization or community that created an impact?

All of these carry an enormous weight, because it shows them that you have what it takes to finish what you start.

The Discrete Mathematics course during my sophomore year introduced me to predicate Calculus and prepared me for a research internship in Logic at the [university] under [professor]. Under his tutelage, I developed an automated problem solver for the famous Einstein puzzle, which involved translating user input to meaningful predicates and extensively used resolution principles to arrive at the solution for the puzzle. Drawing

inspiration from my experience at [university], I took to developing an automated Boggle solver back at college. I drew on the ideas I picked up in my algorithm course to use a greedy approach involving recursion and backtracking to find words in sequences of adjacent letters in a grid. [...] During my final year, the elective course on Data Mining drew me to explore Recommender Systems. In my final year thesis, my work involved enhancing the traditional memory-based filtering technique by effectively using singular ratings to improve the accuracy of existing recommender systems. The proposal was prototyped using Python and received an award of S grade, the highest one allotted.

- Graduate Student at Stanford University

? WHY DID YOU DO THE THINGS YOU DID?

This is a crucial question to answer, because this is not answered *anywhere* else in your application. While your grades and scores talk solely about outcomes, this question gives you an opportunity to *justify* them. This question can be used to explain anomalies in your application (such as a very low CGPA or test score) and/or walk them through your thought process during the moments you took an important decision in your career, such as choosing to work on a niche topic under a professor.

> *Understanding the reasons that led to something, accepting it gracefully and striving hard to get better, are all the signs of maturity, and top programs hunt for mature people. For something as basic as failing an exam, a mature person will always realize where (s)he is at fault. More than the 'situation' itself, the admissions committee is interested in*

the experience of it, how you overcame it and what you learnt from the entire experience. ”

- Overseas Education Specialist at MINDLER[16]

If something changed the course of your career path or you faced a hardship that influenced your future goals, this is the place to address that. Sai and I changed our course of careers after undergraduation. We studied core engineering (mechanical and chemical respectively) but then switched to a degree in engineering management which led to a career in product management. We understand the difficulty in writing a cogent essay, hoping the admissions committee will see where you're coming from without having met you.

The best way to do that is to be honest in addressing your transformation.

Growing up, I was very close to my grandfather. When I was about 12 years old, he suffered a brain hemorrhage resulting in retrograde amnesia. He couldn't remember his family members or his own name, but could perfectly identify mistakes in Ragas when my mother sang, as he had been an Indian classical musician for many years. I wanted to find out how this was possible. This was the first time I started reading about the human brain. And, from this stemmed my passion for neurobiology. [...] After graduating as valedictorian in both my high school and pre-university, I wanted to study life sciences. Being in India, where there is little interplay between life science and technology in undergraduate science courses, I felt that the best way to experience the synergy would be to study Biotechnology Engineering. I enrolled at the Department of

> *of Biotechnology at [university], which is one of the leading Biotechnology departments in India.*
>
> *- Doctorate Student in Biochemistry*

WHAT WILL YOUR FUTURE CONTRIBUTION TO SOCIETY BE?

We know you have grand dreams you wish to realize one day. Show the committee that studying at their institution is the right means to achieve them. This goes back to the point of having questions that you want answered through your graduate school experience. If you're hoping to become a biomedical engineer who wants to help paraplegics walk again, you need to find out the questions that your graduate school experience can answer for you: *can we use technique A to improve somatosensory reflexes by x%? What are the main causes of symptom B? What research has been conducted thus far at the university on topic C?* Once you lay out your thoughts on the topic, don't be shy in speaking in detail about your goals.

Each of us wants to leave this world better than we entered it. Why am I writing this book?

To bridge the gap between those who seek out quality education and those who can offer it.

To democratize valuable information so everyone who needs it has access to it.

To level the playing field irrespective of someone's economic background.

So, as you describe your future goal(s), go into specifics on *why* and *how* you wish to achieve them.

[paraphrased] In five years, I will launch India's first virtual reality restaurant. In a food obsessed country like India, this unique eatery, via an application, will bring the menu alive by projecting a virtual 3-D representation of food choices and present customers with the look and texture of the food item before they place the order. There would also be a projection of a mini chef who prepares the dish on the table in front of clients, waiting to be served. My vision is to channelize the profits from my restaurant into finding an effective solution to India's food wastage problem. [...] India wastes 40% of the food it produces and yet, 135 million people go hungry every day. I encountered this disturbing statistic when I volunteered as a Community Representative for The Roti Bank Foundation of India, a non-profit that collects perfectly edible surplus food from houses and distributes it to the needy. By designing the distribution process around a temperature controlled casserole which gave community residents the flexibility to drop off their rotis on the way to school/work, I collect and supply 240 rotis and feed 150 people every day.

- Aniruddh Menon, Graduate Student at Dartmouth College

Aniruddh was meticulous in adding a footer in his essay explaining what a *roti* meant. If you plan on including terms that are colloquial or regional which an international audience might be unfamiliar with, **please add a footer** or provide some context inline.

FINALLY, BE YOURSELF

This is a lot harder to explain than any of the previous questions.

> Identifying a disingenuous essay is like seeing through clear water.

Don't forget that those who read your essay have *years* of experience reading thousands of such documents. They know when they're listening to a student talk about a topic they have little knowledge on. They know if you're faking an illness to justify a bad outcome. We cannot stress the importance of sincerity while writing this essay.

Graduate school is a dream come true for thousands of students every year; but truly reaping the reward from the experience won't happen if you begin the journey with an inaccurate portrayal of yourself.

This is also a chance to think about how you can channel your quirks and personality through paper. If you were to read out the essay to someone in a conversation, how would you word it?

To finish this off and give an example, below is an excerpt from the final passage in one of the sample SOPs.

There is only so much one can include in a statement of purpose. I hope you will take the chance of knowing me in person by accepting me to the institute. I want to be part of the Artificial Intelligence dream of developing intelligence as humans exhibit it. I am committed to contributing to the global committee to the best of my

ability. I am working at a consulting firm at the moment. The work is good, yes, but it isn't anywhere near challenging or thrilling as the smallest new piece of information that I come across on Artificial Intelligence. It's only a nudge I'm looking for to get me started. Please grant it to me.

- Doctorate Student in Computational Neuroscience

PRINCIPLES OF WRITING

We talked a lot about the questions you need to answer, but just as important is *how* you answer them. As you begin to write your essay now, keep the following two writing principles in mind.

SHOW, DON'T TELL

There is a famous quote attributed to one of the greatest writers of fiction short-stories, Anton Chekhov[17][18].

> *"Don't tell me that the moon is shining; show me the glint of light on the broken glass."*

We want you to read that quote once again. It has a powerful meaning.

Too often, students clutter their essay with bombastic adjectives: *hardworking, disciplined, driven, passionate, empathetic*. Rather than *telling* them that you are a hard worker, *show* them that you are a hard worker by talking about how you used to spend every weekend volunteering at the local food shelter.

CLARITY OF THOUGHT

A core tenet of writing is *clarity of thought*.

> *I'm always excited by the rare applicant who clearly has thought through a research area, and has some ideas and real thoughts about problems he/she wants to tackle. It's fine if the ideas are not likely to succeed, or if the thoughts are not realistic for current research. What matters is that the student showed their logical reasoning skills, and their passion for research at the same time.*

- Professor, University of Chicago[19]

William Zinsser, a renowned non-fiction writer and one of my inspirations, rightly said that **writing is thinking on paper with clarity**[20].

As long as you can *think* clearly,
you should be able to write clearly.

This ability to think with clarity is more rare than you would imagine, and requires a good amount of introspection and taking walks. Hence, even before you begin writing, remember to first think through your ideas clearly. Only then you should transfer them onto paper.

Apart from those two core principles, here are a few more do's and don'ts while writing your essay:

- **Do not** have typos or ungrammatical sentences. This has to be the basic level of editing that you do before submitting your essay. Take advantage of the many software applications that can do this for you[21].
- **Do not** use excessive punctuation such as quotes (“), en-dashes (“-”) , semicolons (;), and contractions such as “don't” and “B.S.” Remember that they would also not know acronyms of universities in your country.

- **Do not** be ambiguous in your sentences. Use an active voice to speak about *specific* situations that *you* faced.
- **Do** use a formal and conversational tone. The tone you use should convey enthusiasm and interest, without coming across as sarcastic or witty (yes, please avoid all jokes).
- **Do** stick to the specified word limit. If no limit is mentioned, write 750 to 1000 words in a 12 point font with a 1-2 single space between the lines. **Remember, brevity is always better than verbosity.**
- **Do** know that simplicity is underrated. Although you might have stuffed your brain with words learned for your GRE exam, this essay is not a playfield to use them. Readers appreciate a simple and clear sentence, as opposed to one that requires them to open a dictionary.

Hopefully, that has given you enough ammunition to begin writing. Although we showed you excerpts from essays in this chapter, we want you to write your first draft *without* looking at more examples. Your first draft must be impulsive; let your subconscious mind take over and blurt out all the thoughts you have on paper so your mind is set free.

Daniel Kahneman[22], a renowned psychologist and economist, proposed in his bestseller, *Thinking, Fast and Slow*, that we all have two modes of thinking: System 1 and System 2[23].

System 1 is the more impulsive, automatic, and involuntary part of your mind. It is what helps you jump off a curb when you see a speeding car or locate the source of a sudden noise. On the other hand, **System 2** is the more deliberate, slow, and voluntary part of your mind. You were able to write your final thesis and solve complex algebra thanks to System 2. It requires you to devote your attention and think deeply about a topic.

They both have their merits and demerits. We recommend writing your first draft using your System 1, and conducting subsequent edits with System 2.

Glad you asked! We recommend doing the following:

- First, review it yourself by going through some good samples
- Second, get it reviewed by alumni in your field of interest
- Finally, get it reviewed by alumni and friends who aren't necessarily in your field but have great command over the written word

REVIEW IT YOURSELF

Writing a stellar essay requires reading dozens of stellar essays. You can start with the Resources folder where we've added a few samples. Beyond that, there are many publicly posted samples out there that will stimulate your thinking[24].

When you find a sample that catches your attention, open it in a document format where you can begin adding **highlights** and **comments**. In fact, we would even recommend printing out these essays and doing it the old fashioned way, using a highlighter. Write down the parts you liked about the essay, and why you think you liked them. Was it the choice of words? Was it the depth that the candidate went into while describing a concept? Was it an interesting life experience? Write it down and go back to your essay to find ways to incorporate the same.

REVIEW BY ALUMNI IN FIELD

This refers to your seniors and mentors who are currently in or were in the position you aspire to reach, working in your domain of interest.

> Before you send out the emails to them, spend some time wording it carefully. The people you reach out to are probably in graduate school themselves, working 60 hours a week. And yours would also not be the only email request they receive.

So, take the time to do the first few reviews yourself (or with the help of a close friend) before reaching out. In your email, the following topics should be conveyed clearly: interest in studying abroad, relevant past experiences, and the request. Below is a sample template:

Hi Neel,

How are you? I'm sure you must be drowning in classes and assignments. What is something you learnt recently? I would love to know. I recently came across your article on the day in the life of a graduate student, and devoured it! You probably know, but I'm applying for a Master's in Electrical Engineering myself now and couldn't have read it at a better time.

I knew I wanted to study abroad within the first ten days of my summer internship at University of Waterloo, Canada. The stereotypes that I un-learned and people I met will always have a lasting impact on me. But, choosing the universities to apply to and nailing down my specialization took more time than I thought. I'm sure you must have gone through something similar.

I spent a week writing the first draft of my SOP; writing for 30 minutes every day. I also spent the next two weeks editing it by reading through some amazing samples online. However, to truly make it insightful and strong, I need help from seniors like you that I look up to, who also specialize in a similar field.

I know you're busy, and really want to respect that. Let me know if any of the following options work for you:

a) Sending me your SOP so I can use that as a guide

b) Sharing some important guidelines in writing one or

c) (Most preferable!) Reviewing mine and adding your comments as feedback. If I'm being overly ambitious, it could even be all three :)

However, if you don't have time or don't feel comfortable sharing yours, please share any insights or advice! Thanks for reading till here, Neel. I can't wait to hear back from you.

Best regards,
Siya

As you reach out to people, it is important that you keep track of your emails. If someone does not respond back in ten days, it is absolutely okay to send them a gentle reminder.

A lack of response doesn't always mean a lack of interest. Sometimes, people are just busy.

Finally, when you share your essay with them, please do it via Google Docs or a similar collaborative tool so they can easily add comments to it. Reduce friction from their end as much as you can.

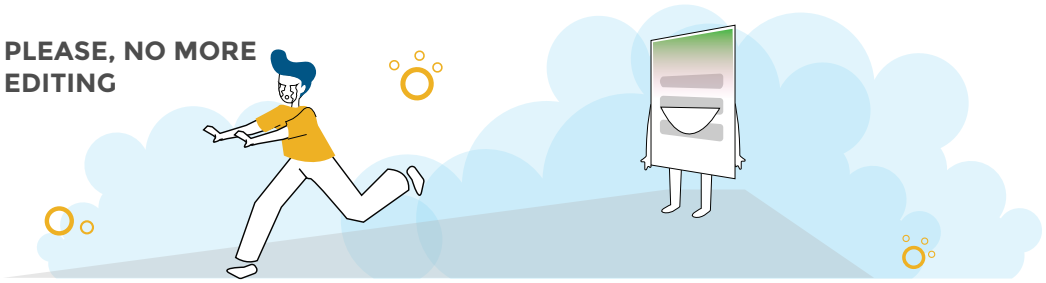
REVIEW BY GOOD WRITERS

You can follow a similar process as before here, except the kind of input you receive from a good writer would be different from the kind of input you receive from a subject matter expert. You need an essay that conveys your purpose *and* portrays your written skill. When you reach out, mention that you specifically want them to critique the diction of your essay.

> Finally, don't reach out to everyone you know at once. Assess the quality of feedback the other person can provide first. Are they an amazing writer with limited time? If yes, you should probably reach out only after you've reached version six or seven of your draft. You want **incremental input to improve**, not a storm of input at once. And even after you receive all their input, assess if it makes sense before incorporating it.

A lot of students want to know when an SOP can be called complete. We know you won't like this answer, but the truth is: *it will never be complete.* However, the best practice is to get it reviewed by three to four people and review it yourself half a dozen times. Keep it ready at least a week or two before your deadline. In the final week, simply revisit it every few days and make minor corrections.

We can't help you in deciding when you know it is complete, but we can tell that you will reach a stage where you wouldn't want to read a word of it anymore.



This is a great question. A great SOP is not just written well; it is also *presented* well. Similar to the tips that we had mentioned for editing a resume, we have a few tips for your essay as well.

- Use a clear, readable font such as Times New Roman or Helvetica.
- Stick to a font size of 12 with a 1.5 line spacing and a margin size of 1 inch on *all* four sides.
- Do *not* try to make it look eye-catching by adding colors or your picture. They care much more about the content than the visuals.
- Upload it as a PDF file so the formatting is maintained.
- Indent the first line of each paragraph by half an inch and *justify* your text.

TAKE A WALK

As a final piece of advice, take a walk.

Alone, and without your phone.

It can be around a basketball court or in that garden next to your university's main office. Cal Newport[25], an associate professor of computer science and the author of many best sellers, says in a famous talk[26],

> *The way to find your passion is to be so good at something that the people around you can't ignore it.*

And the way to be so good at something is through unadulterated practice and *deep work*, an ability to focus without distraction on a cognitively demanding task. That cannot be attained by sitting in a noisy cafeteria surrounded by people and distractions.

A quiet walk → clarity of thought → a great essay

So take a walk, every day if possible, for thirty minutes to an hour and observe your thoughts *without* judging them. You will be surprised at the kind of insights you generate about yourself and your environment. It is no surprise that the best ideas come to you when you least expect them[27].

Graham Wallas[28], a social psychologist and co-founder of the London School of Economics, broke down the creative process into four steps in his 1926 book *The Art of Thought*. The four steps are: **preparation, incubation, illumination,** and **verification.**

Most people tend to overlook stage two in this process, where they are supposed to *incubate* themselves somewhere *far away* from a problem so they can generate novel thoughts and be more efficient while they return to solve it. Your brain likes it when you let it wander on its own after putting in cognitive effort in the preparation stage.

So take a walk alone with your thoughts, and you just might figure out the opening sentence of your essay.

I performed the painful task of re-reading the different versions of my statement of purpose I had written more than three years ago. In one sense, it acted as a time-travel lens to magnify the level of specificity (or lack of thereof) I possessed when I was applying for my graduate program. My essay was all over the place.

It began with a childhood memory of how I was inspired to pursue science. The body of it battled between an overview of my research and the organizations I managed. The ending was lackluster with a generic mention of a professor's name and a recent paper of his from the university I was applying to. I ended up not following many of the qualities that make a great essay; many of which I'm asking you to follow now.

If I was reading my essay right now, and had to decide to select or reject 2017-me solely based on the essay, I would probably reject me.

That is why I want you to learn from my mistakes. I want to shine a light on the many *invaluable* lessons that someone can learn in hindsight, and hope you imbibe some of them right now.

STUDENT TESTIMONIALS

> *I found myself trying to write an essay amidst the stress of senior year coursework, thesis work, and placements. A friend of mine suggested I obtain a free profile review by a consultancy. I was a top student in my class and proactive when it came to extracurriculars. So when I saw that the*

consultancy recommended universities that were all tier 3, I was shocked. I decided to take things into my own hands and began drafting my SOP.

I wrote the first draft without giving it too much thought. Then, I looked for SOP questionnaires online that provided guidance on questions to answer. Once it got to a good stage, I began removing unnecessary information, followed by getting feedback from my alumni and mentors. Finally, I began fine-tuning it to adhere to the word limit set by each university. I went through the editing process separately for each university. ”

- Nivedhithaa Santhakumar, Purdue University

“ *Around mid-October, I created a rough mind map, trying to answer some basic questions around my academic interests and long-term goals. I thought hard about how I can contribute to a university's research work and what I can take away from it. In hindsight, these were the main segments of my essay, but the journey wasn't smooth. As soon as I began writing, I experienced the dreaded writer's block. However, soon after, I wrote 2500 words in one sitting and ended up with a rather verbose essay.*

In the end, what helped was putting myself in the shoes of the admissions committee and imagining having to read a hundred essays a day. That made me talk about only the most pertinent ideas and be parsimonious with the whitespace. Of course, this was followed by iterative alumni reviews that helped fine-tune the sentences and improve the

> *presentation of the content. In short, be original, and come up with a way to stand out from the crowd.*
>
> *- Vishnu Chandrasekhar, Carnegie Mellon University*

CONCLUSION

Humans will always be riddled with cognitive biases. Rather than trying to escape them, think about how you can use the knowledge to your advantage. The Statement of Purpose is one *part* of your application, not all of it. Don't overstate its importance. The person reading it wants you to show them how you plan on utilizing the time spent at their university as a bridge to go from where you are now, to where you want to be.

As you begin to think about writing the essay, first take a step back and try to answer a few questions: why are you choosing this university and major? How do you want to spend your time at graduate school? What is your long-term goal? Do you have the experience needed to provide value in return? Can you think and write clearly? These questions should be used as guiding principles, and ideally, your essay should answer all of them.

Getting your SOP reviewed is very critical, but don't begin sending emails to dozens of seniors without wording it carefully first. Be very selective in the people you choose, and try to reduce the friction from their end as much as possible by sending it in a collaborative document where they can add comments, and send helpful reminders if they don't respond after a week. The people you reach out to have been in your shoes already, so they understand the need.

You will never be sure that you have reached the end of your review process. So either stop editing it a week before the application deadline, or set a threshold of six to seven reviews before declaring it done. Finally, take a walk alone to indulge in your thoughts. You'll be pleasantly surprised at the things you begin to notice.

A LITTLE REFLECTION

- When you went through some of the cognitive biases, did you notice any that you fell prey to recently?
- What do you want the person reading your statement of purpose to walk away thinking?
- If you were the senior being approached by five students, how would you want them to email you?
- What interesting thoughts did you have after taking a few walks?

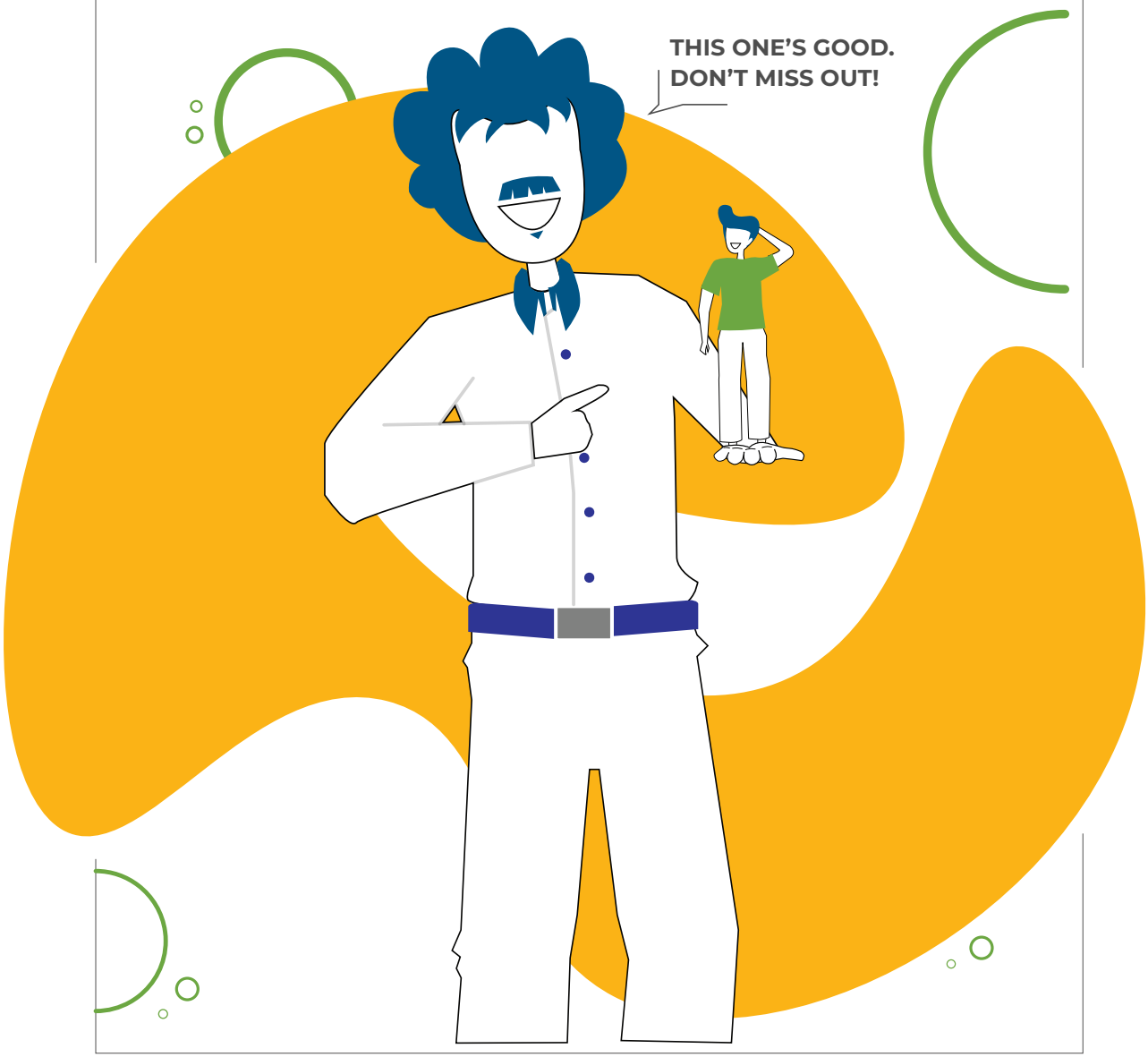
Chapter

08

GETTING YOUR

LETTERS OF RECOMMENDATION

Time to reconnect with your
professors and mentors



When we think of our professors, we generally picture them inside a classroom with a clicker (or a piece of chalk) in hand, delineating a topic with ferocity.

Our mind falls prey to a few heuristics when it comes to decision-making, one of which is called the **representativeness heuristic**[1]. It was discovered by two behavioral economists and Nobel laureates, Daniel Kahneman[2], who we referenced in Chapter 7, and Amor Tversky[3], in the early 1970s.

You can think of heuristics as shortcuts that your brain uses to reduce cognitive overload and get to a decision quicker. However, sometimes, these shortcuts lead to faulty decisions and stereotypical thinking. Let's look at an example from their book, *Thinking, Fast and Slow*[4], that we introduced in the previous chapter:

> *An individual has been described by a neighbor as follows: "Steve is very shy and withdrawn, invariably helpful but with very little interest in people or in the world of reality. A meek and tidy soul, he has a need for order and structure, and a passion for detail." Is Steve more likely to be a librarian or a farmer?*

What do you think?

Most people think Steve is more likely to be a librarian. However, the number of farmers greatly exceeds the number of librarians in the world. We don't take such statistics into account while making these observations.

> When we make decisions based on representativeness of what we already know about someone or something, **we generally tend to overestimate the likelihood that an event related to that will occur**, even if it objectively would not.

In this scenario, since we have observed our professors to be inside a classroom during most of our interactions, we tend to be blind to the rest of the duties they attend to. A typical day for a professor involves teaching classes, preparing for the classes they teach, receiving over 50 emails and responding to about 40% of them[5], writing academic paper(s), reviewing academic paper(s), managing administrative duties (which some[6] have shortened to RAM, i.e., Random Ass Meetings), and of course, if they manage to find the time amidst this chaos, *actually* perform research to advance humanity's collective knowledge.

The next time you approach a professor to ask for a letter of recommendation, remember the above and make their job as easy as possible from your end.

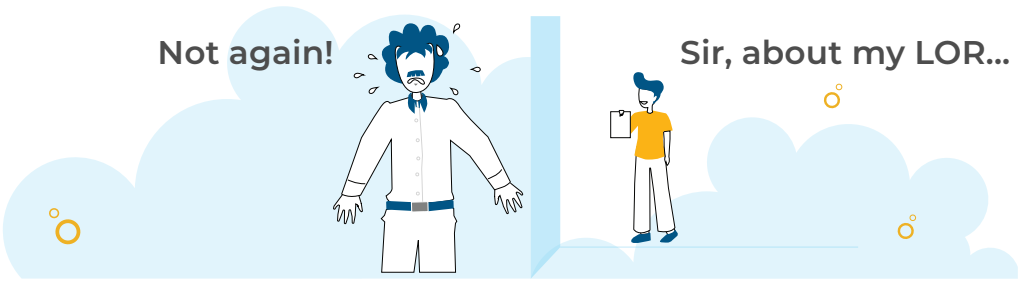
Great question. Most components in your application—statement of purpose, resume, extracurriculars—are a personal account of why *you* think you should study at the university you're applying to. The letter of recommendation, on the other hand, lets the admissions committee know

why someone *well-regarded* and *academically sound* thinks you should study at the university. It is not to be regarded as a mechanical task wherein you write up a generic draft which is then blindly signed by your professor and sent to the university.

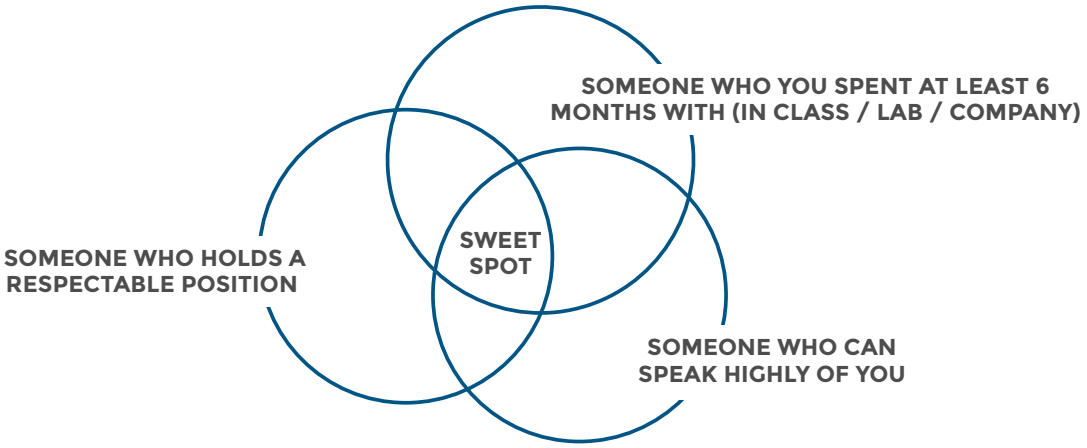
A recommendation letter is a pretty big deal.

And the professors know this. A seasoned professor might have written dozens in their lifetime. However, that does not mean they *enjoy* writing it. I found a question on Quora asking if professors enjoy writing recommendations. Here is an excerpt from the response by Tim Hanson, a professor at the University of Southern California[7].

> *Honestly? No. It takes me at least a couple hours to write a good letter. This involves boiling everything a student has done down to two "knock 'em dead" paragraphs. So I have to read their vita, teaching evaluations, discuss courses I've taught them, awards they've received, etc.*
>
> *I often put writing such letters off because I dislike it so much, even for the best students. BTW, if I cannot write a student a good LoR I tell them that directly up front. That way they can ask someone else.*



So, it is up to you to primarily choose the right people. The right person is someone who sits in the intersection shown here:



This is *not* a trivial problem, so take your time to choose the right list of people. We recommend following the method laid out below:

1) CALCULATE NUMBER OF LETTERS NEEDED

Generally, a university would require either two or three letters of recommendation. In most cases, it is two. Assuming you plan on applying to eight universities, that comes to 16 to 20 recommendations. However, that does not mean you need to find 16 to 20 *recommenders*, since a professor would be willing to shell out more than one. From our experience, professors provide three on average, and maybe more depending on the strength of your relationship.

A back-of-the-napkin calculation says that you would need between **four to six recommenders** to apply to eight universities.

Now, let's stop assuming and start putting this data in the *Dream Tracker*.

Navigate to the sheet titled *LORs*, add your list of universities, and fill in the column that asks you for the number of recommendations needed for each.

2) CREATE LIST OF POTENTIAL RECOMMENDERS

As mentioned earlier, it *has* to be someone who you spent a significant period of time with. The six months mentioned is a good standard to keep in mind, but it can also be an employer with whom you interned for a period of three months.

Although we have been using the term *professor* as a catch-all for people who can recommend you, **it doesn't have to be someone within the realms of academia**. In fact, it would help if you can get it from someone who works at a company (a manager, or maybe a CEO?), so your profile looks well-rounded.

Since we decided you might need between four to six recommenders, be sure to have a list of at least six so that you have a buffer for people who might say no.

3) RE-CHECK THE LIST ONCE MORE

Ask yourself if you put down a name because they have closely observed your work or because they are the head of a department who has seen you thrice over the past four years. We *all* want to get a recommendation from the heads of departments and directors of companies.

However, would you rather someone write this:

> *"It is my pleasure to recommend Siya to your graduate program. Siya took my course on Psychology in her junior year. She is a strong student, works well with her peers, and is attentive inside the classroom. She scored an A in my course and consistently scored above average in her assignments. Apart from being a good student, she also is the head of design for the university's magazine and spends her time volunteering at the local NGO on the weekends."*

Or have them write *this*:

> *"Siya caught my attention from the very first day with the thought-provoking questions she asked in my classes, when she took my course on Psychology. She displays maturity that goes well beyond her years and treats her peers with great respect, something that I witnessed when her team came for the office hours every other week. Apart from excelling inside the classroom, I've also had the pleasure of witnessing her superb design skills in the university's magazine published every month. Her passion to give back to the community through volunteering is obvious through her thesis essay, and even casual encounters. I strongly recommend her for your graduate program, and am waiting to see her shine."*

The former is not a bad recommendation.
It is just a recommendation *written* badly.

The professor sticks to merely mentioning facts (scored an A, scored well in assignments, head of design, etc) that the admissions committee already knows, and doesn't mention any personal observations.

Tying all that together, a good letter should be written by someone who:

- Has observed you over a period of time in close quarters, frequently
- Has had positive personal encounters (remember, it's plural)
- Has a relevance to the program you're applying to

So now, ask yourself once again: *did you pick the right people?*

If you did a good job picking the right people, this step should proceed smoothly.

How well a letter is written depends on choosing the right people *and* providing them with sufficient information for them to do their job well. We thought we would walk you through how we would approach a professor for a recommendation *now*, given all the wisdom we've gathered with the help of hindsight.

APPROACH IN PERSON

We understand this is not always possible, if your professor lives in a different city (or country). However, as much as you can afford to, schedule some time with your professor so you can request for it in person. If that isn't possible,

request to schedule a call if they know you well enough or send a well-worded email which is what most students resort to. We'll get to the *well-worded* part in a minute.

GIVE THEM A REASON TO SAY YES

To reiterate, you are *not* the only student who is requesting for a letter, and they have a packed schedule as it is. So give them a reason to say yes by being prepared with your request. If you're meeting them in person or speaking on the phone, give sufficient context around the following: why you chose to study abroad, picked that major, and decided upon those list of universities. They would be delighted if you chose a major where their expertise lies.

In addition to requesting for a letter, you need to provide them with the information they need to fulfill that request.

Speaking of which,

SHARE THE *RIGHT* AMOUNT OF INFORMATION

Most things in life are not black or white. Rather, they lie somewhere in between. Sharing too little or no information will lead to them writing a short, insipid letter that could hurt you rather than help you. Sharing too much information will overwhelm or, worse, annoy them into writing a subpar letter which could once again hurt you.

Beyond sharing the foundational details, you need to carefully cherry-pick the achievements and highlights you want to mention, to refresh their memory of how amazing you really are. In no specific order, the following are recommended fields to share:

- Context of your relationship with them
- Brief description of the program you're applying to and why

- Resume
- CGPA (and/or semester wise GPA)
- List of relevant internships/projects you've worked on
- Selective list of achievements
- Selective list of extracurricular and volunteering activities
- **Instructions to write and/or submit the letter**
- **Deadline to submit the letter by (you don't want to forget this)**

Ideally, we recommend you **create a document with all the information mentioned above** so they have one or at most two documents to reference before writing your letter.

Putting all that into practice, below is an example of a good introductory email asking for a recommendation, assuming you cannot meet them in-person:

Subject: Request for Letter of Recommendation [thank you]

Dear [Title + Name],
I hope you are having a wonderful week so far! Firstly, thank you for taking the time to read this email.

I am reaching out to request for a letter of recommendation from you as I am applying for the master's program in Energy Engineering at University of California, Berkeley, USA. My aim is to first pursue a specialization in Solar Engineering, followed by a doctorate degree.

One of the main drivers in pursuing this degree were your classes on physics and advanced mechanics. Your way of explaining a concept using real-life case studies motivated me to think of ways I can contribute to climate change by working towards building a sustainable renewable energy source.

I would be honored if you took the time to recommend my candidature to the university. I have attached below all the required information that you can use to write the letter, including, but not limited to: my past internship work, publications, transcript, impact through volunteering, and accolades received. Should you need any more information, please let me know. The recommendation is due on Oct 21st, five weeks from now.

That being said, I know you have an extremely busy schedule and so I would completely understand if you don't have the time to write this letter. Please feel free to say no. Thank you for taking the time to read this all the way and I hope you have a wonderful rest of the week.

Sincerely,
Neel

That's it.

A polite, genuine, well-written email goes a long way in strengthening your relationship with the receiver.

If you noticed in the final paragraph, we alluded to something important: *giving the receiver the opportunity to say no*. Why is this important?

Think about a scenario where you only have one restaurant to eat at, or worse, only one dish to choose from. Would you be happy with being constrained to having a single choice, having no freedom to exercise your choice in the first place?
Probably not.

At least biologically, we like to exercise control[8]:

> *We are born to choose. The existence of the desire for control is present in animals and even very young infants before any societal or cultural values of autonomy can be learned. It is possible that organisms have adapted to find control rewarding – and its absence aversive – since the perception of control seems to play an important role in buffering an individual's response to environmental stress.*

When you give the other person the choice to refuse upfront, it helps them feel in control.

Paradoxically, giving someone the option to say no might improve the chances of them saying yes.

Keep this in mind for not just now, but also for your future encounters with people when you network.

We're almost there. Now that you've chosen the right people and sent out requests for recommendation, it's time to wait. And follow up diligently.

In the *Dream Tracker*, ensure that you mention the submission deadline for each university and **make use of the *Add Reminder* or other such add-ons**[9] to set reminders to be sent to yourself two weeks before so you can notify your recommender.

Assuming it takes the recommender at least four weeks to write and refine your letter, your first contact should happen at least a month or so in advance, and the follow-up should be two weeks before. As soon as you are notified of the submission of the letter, take time to draft another email expressing your gratitude.

Getting your dream admit requires the help and support of a village, and your recommenders play a key role in that village.

TO WAIVE OR TO NOT WAIVE

Every university you apply to will display the following message in the letter of recommendation section of the application[10]. This gives you the choice to either *waive* or *not waive* your right to view the recommendation submitted by the professor (or whoever you asked).

That question above is asking, *Do you waive the right to request access to the information provided by your references?*

Have you wondered why this question is being asked?

We did.

> A landmark law titled **Family Educational Rights and Privacy Act (FERPA)** was signed into law by President Ford on August 21st, 1974.

The following is a brief gist of what it states[11]:

> *The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education.*
>
> *FERPA gives parents certain rights with respect to their children's education records. These rights transfer to the student when he or she reaches the age of 18 or attends a school beyond the high school level.*

Surprisingly, the law went into effect without offering the chance to be heard by those who were impacted by its enactment. There were no public hearings asking for testimonials from the institutions it affected. The only reasoning offered[12] by the Senator who enforced it was that it was in response to *"the growing evidence of the abuse of student records across the nation."*

This shocked schools and universities across the nation.

One of the main concerns of the law were the letters of recommendation written by professors under the assumption of confidentiality thus far.

Did the students have the right to read them all under FERPA? What if the student wanted a sentence to be corrected? Can students sue the professor or the institution for wrongly stating a fact? Some of these questions were put to rest when amendments were made to the hastily enacted law on December 31st, 1974. It barred students from accessing any letters written prior to January 1st, 1975.

Since then, FERPA has undergone many revisions, offering more leeway for schools to disclose the personal information of students to certain entities (such as a school they transfer to or the law enforcement when requested under a subpoena).

Today, it is *mandatory* for universities to give you the choice to either view the recommendation or waive your right to view it.

We strongly feel you should *waive your right* to view it, i.e. choose *yes* in the screenshot shown earlier, for the following reasons:

- ***Recommender's view:*** Someone who you carefully chose and someone who agreed to recommend you is *not* a person who would write a bad letter (or hopefully, a badly written letter). Many recommenders would draw comparisons between you and other students in their letter[13]. If they know you can read that at a later date, they would resort to a rather vague and insipid letter with little specificity. By waiving your right *and* letting them know you did that, you also establish a level of trust with the other person which will help your case further.

- ***Institution's view:*** The university gives you the right to view because they *have* to. It doesn't mean they encourage that behavior. Not waiving your right can be seen as a mild red flag for universities who might reach one or more of the following conclusions: a) the letter is not candid since it was not written under the assumption of confidentiality, b) the student might have played a part in writing the letter, or c) the student must have a moral obligation to exercise this right.

If that isn't enough reason, you might not learn what you're looking for even when you read the letter, since it would be out of context. Unless you read all the other letters written by your recommender, any conclusion you draw would be inaccurate.

That is why we ask you to waive the right and choose *yes* for that question.

However, if you choose to view it for personal reasons, notify your recommender of this decision explicitly when you ask them to write you a letter.

STUDENT TESTIMONIALS

> *The best strategy to get your recommendation is to first build good relationships with the people you work with, be it your supervisor or internship guide. From my experience, it*

is better to work with a young professor in a small group. I realized this through my association with an Assistant Professor at IIT Madras, under whom I interned twice. He was a great mentor with whom I built a strong relationship, and we ended up publishing a paper together. He also went so far as to assist me during my graduate applications.

The same holds true for my third-year summer internship in Germany. During this internship, I built a good relationship with my supervisor who happened to be a post-doctorate in the group. He later went on to help me obtain recommendations from my professor and was very helpful in reviewing my SOPs. In short, it is all about developing a natural rapport with your professors and guides that will aid you in getting the required LORs. ”

- Saman Salike, University of California, Berkeley

“ *I felt it was important for my recommendation letters to reflect on me holistically: including my achievements and career goals. If you feel the same, you need to communicate this transparently to your recommenders. I set up meetings with my recommenders and spoke about my future aspirations, what the program was about, and how it would lead me to achieve the destination. After the meetings, I sent them a written document where the aforementioned was elucidated along with a copy of my resume. I also provided details on what skills were necessary for the program and how I have displayed them in various scenarios. By doing all this, I made sure to equip them with the right information to write a good letter.*

Honestly, writing a letter of recommendation is a time-consuming task and requires huge dedication on the part of the recommender. Hence, do not request for it at the last minute. Follow a step-by-step strategy that gives them the right information and sufficient time. ”

- Uchechukwu Ekeopara, Dartmouth College

CONCLUSION

You might have begun reading this chapter thinking, what's there to learn about getting a *letter of recommendation?* We hope you feel differently now. A letter of recommendation, when obtained from the right person, can go a long way in getting you admitted. It shows the admissions committee who you are from a third person's standpoint, as opposed to your own.

So begin to note down the list of recommenders based on the Venn diagram we proposed: how long they've known you, how well they know you, and how established they are in their role. The first two factors should take precedence over the third.

As much as you can, approach your recommender in person when you ask for the letter since it *is* a huge time commitment for them, and not something they enjoy writing. You can make that process easier by being prepared and sending a document with information about your achievements and experiences. A nicely worded email will go a long way. Also, don't be shy to follow up with them. Give a buffer of ten days after your first email to follow up if you haven't heard back.

Finally, we strongly recommend that you waive your right to view the letter . If you have done a good job choosing your recommenders, there shouldn't be a need to view it in the first place. This letter must be written with confidentiality and trust. Once all the letters have been submitted, take the

time to thank them for their effort. You can also go the extra mile to keep them in the loop as you begin getting your results, thus continuing to grow your relationship.

A LITTLE REFLECTION

- Who are three people you have met that you highly look up to in your professional life?
- What were the top criteria you used while choosing your recommenders?
- Did you provide them just the amount of information they would require?
- Aside from an email, how else can you say thank you to your professors? Think about it

Chapter

10 HITTING THAT BUTTON

And with that, you have reached the end of submitting your applications.

It doesn't feel that way though, does it?

That's okay. That's bound to happen when you've been working on a task for more than four months (or in some cases, even twelve months![1]). In an ideal scenario, you should complete your standardized tests after shortlisting the universities and before beginning the application so that your GRE preparation doesn't collide with writing the SOP.

Aside from the time that goes into preparation for these tests, set aside at least three months to work on your application for all the universities.

Most universities have a singular application deadline that ranges between early December to mid-January which every applicant must abide by. However, there are outliers to this normal, and they come in the form of *Rolling Admissions* and *Rounds*.

Universities with ***Rolling Admissions*** review the application as it comes in, and send out the result within four to eight weeks[2]. Universities with various ***Rounds*** in their application process evaluate the applications in batches at the end of each round[3].

EARLY BIRD GETS THE WORM

In both cases, the advantage of applying early is clear[4]. The sooner you apply, the more spots there are to fill and fewer students to compete with for them. You will get your result sooner, which will give you more time to work on the post-admit procedures and let you save money by not having to apply to other universities, assuming this was your first choice. Even otherwise, having an admit on hand will prompt you to apply only to the universities which you had ranked above this. Finally, the universities will know that you are more serious about their program if they see an application land by October as opposed to January.

However, you shouldn't forget to think about the other side of the coin.

Is it okay to submit a shabby sub-par application just to apply soon or to meet an earlier deadline?
The answer is a resounding *no*.

You should do your due diligence with each application by proof-reading the essays at least a few times, getting recommendation letters from your top choices, and double-checking your resume and transcript. Those who apply earlier are most probably students who are seriously considering that university, and hence would have submitted a strong application. You want to put your best foot forward here. If you feel the universities that have early deadlines and rolling admissions are in your top choice, the best strategy is to simply start early.

I have this ritual at the end of each workday wherein I go over the list of tasks I had accomplished during the day, write down

> any highlights or learning points, and glance at my calendar to check the next day's schedule. This gives me a sense of closure. I know that I can safely walk away from my day-time job and begin working on my personal projects (such as this book!).

Try finding such a ritual for yourself as you near the end of completing an application. You could have a check-in call with your friend to go over the details. You could take a walk and go over the application in your head. Do anything that will give you a sense of closure knowing that you've given it your best (or at least a pretty good) shot and that it's okay to move on.

If you've been closely following the guidance provided in this part of the book, it's time to take a break after you are done submitting the applications.

You did it!

Now, turn your attention over to the other parts of your life that took a backseat so far. In the next part of the book, we'll dive into what you can do before and after receiving the admits to finally choose your dream university.

🎁 Congratulations on finishing this guide!

If you found this helpful, I've created more guides on a few related topics that you might find useful.

📌 **An In-Depth Guide on the F-1 Visa:** Written with a lawyer, this guide helps you understand end-to-end about an F-1 student visa, eligibility criteria, cost, timeline, and ways you can use it creatively to start a company.

📌 **List of 30+ Scholarships For Studying Abroad:** Curated over 50+ hours, get access to a list of 30+ scholarships to apply to that could help provide funding to make your study abroad dream come true.

📌 **A Guide to Getting Your First Interview:** It took me 8 months to get my internship offer at Salesforce. In this guide, I break down all the strategies I used to land a Product Manager role at a Fortune 100 company.

Instagram LinkedIn YouTube X

🖋️ About the Author

Soundarya Balasubramani (aka Pooja) is the two-time author of **Admitted** and **Unshackled**, founder of **unshackled.club**, and is currently working on her third book, **1000 Days of Love** and an accompanying course, **Beyond Luck.**

She graduated from Columbia University in 2019 and worked at Salesforce as a Product Manager for 2.5 years before quitting to become an author & founder. She is the recipient of the O-1A and EB-2 NIW extraordinary visas along with 12+ awards, including a $50,000 Emergent Ventures grant, Cargill Global Scholarship, and S.N. Bose Scholarship.