



NEWSLETTER AUGUST 2025

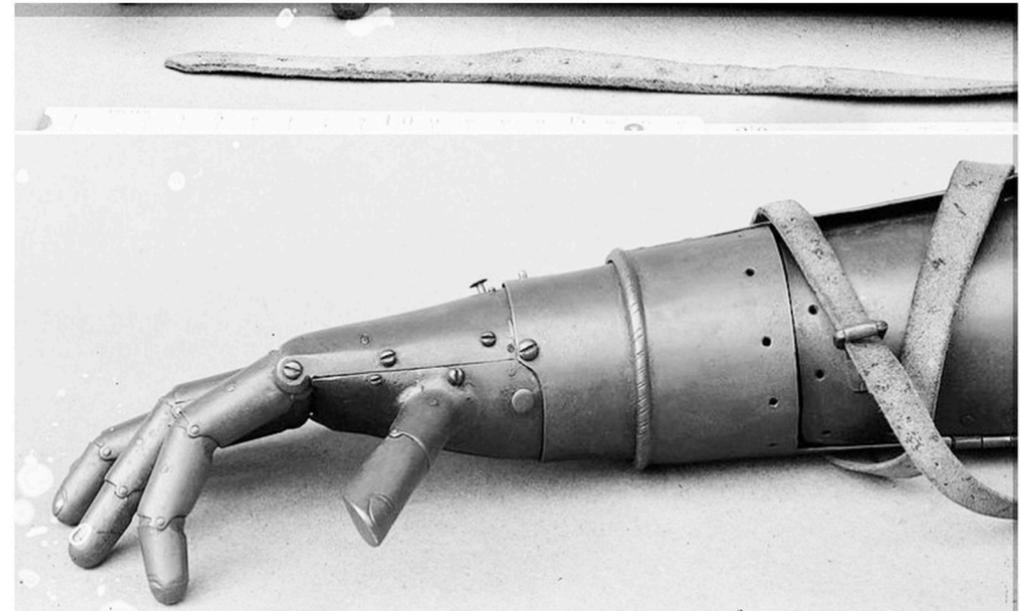


**JM INTERNATIONAL
SCHOOL, DWARKA, DELHI**

NEWSLETTER

BIONIC ARM

Welcome to our newsletter on the history of bionic arms. From the earliest days of prosthetics to the latest advances in technology, we will take you on a journey through the fascinating history of bionic arms. The prosthetic limbs dates back to ancient Egypt, where wooden and metal prosthetics were used to replace missing limbs. However, it wasn't until the 20th century that bionic arms became a reality. In 1912, the first electrically powered prosthetic arm was developed by Gottfried Puhmann in Germany. The arm was controlled by a series of switches and levers and could perform basic movements such as gripping and releasing objects.



In 1940s and 1950s, World War II and the Korean War led to an increase in the number of amputees, which spurred advances in prosthetic technology. During this time, prosthetic limbs were made from lightweight materials such as plastic and aluminum, and were powered by electric motors.



In 1960s, the first myoelectric prosthetic arm was developed. Myoelectric prosthetics use electrodes placed on the surface of the skin to detect muscle movements, which are then used to control the movements of the prosthetic limb.

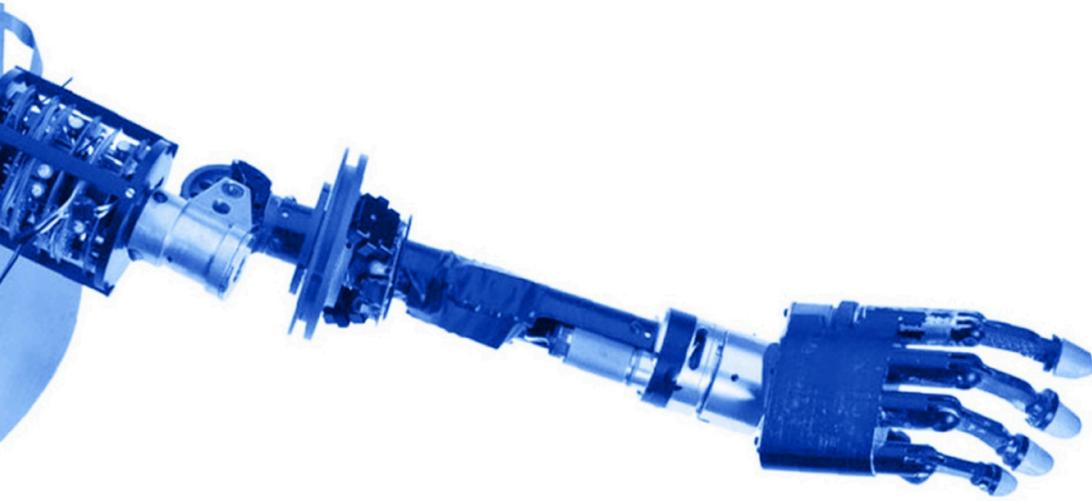
In 1970s and 1980s, bionic arms became more advanced and began to incorporate microprocessors and computer chips to control movement. This allowed for greater precision and control over the movement of the limb. In 1990s, bionic arms began to incorporate sensors that could detect pressure and touch, providing users with a greater sense of feedback and control. By the early 2000s, bionic arms had become even more advanced, incorporating advanced materials, such as carbon fiber, to make them stronger and lighter.

Today, bionic arms are continuing to evolve at a rapid pace. Recent advances include the development of bionic arms that can be controlled using neural implants and provide sensory feedback to the user.

ADVANCEMENT

OF BIONIC ARM

In this edition, we will cover recent advancements in bionic arm design, innovative new prosthetic products, and inspiring stories of individuals who have benefited with bionic arm technology.



Advancements in bionic arm design are revolutionizing the prosthetics industry. Engineers are developing prosthetic limbs that are more comfortable, durable, and easier to control than ever before. One recent breakthrough is the development of bionic arms that are controlled by the user's thoughts. By using advanced sensors and artificial intelligence algorithms, these prosthetic limbs can be controlled with incredible precision and speed.



Another exciting development is the use of 3D printing technology to create custom-fitted prosthetic arms. This technology allows engineers to create prosthetics that are perfectly suited to the individual user's needs, improving comfort and control.

INNOVATIVE NEW PROSTHETIC PRODUCTS

In addition to advancements in bionic arm design, there are also many innovative new products on the market that are improving the lives of people with limb loss. One such product is the DEKA Arm, a bionic arm developed by DEKA Research and Development. This prosthetic arm has a sophisticated design that allows users to perform a wide range of tasks, from picking up small objects to playing guitar.

INSPIRING

STORIES

The use of bionic arm technology has changed the lives of countless individuals with limb loss. One such individual is Claudia Mitchell, a former US Army officer who lost her arm in a motorcycle accident. With the help of a bionic arm, Claudia was able to regain much of her independence and resume many of her favorite activities.



Another inspiring story is that of Johnny Matheny, a man who lost his arm due to cancer. Johnny was one of the first people to receive a Modular Prosthetic Limb, a bionic arm developed by Johns Hopkins University's Applied Physics Laboratory. With the help of this advanced prosthetic limb, Johnny was able to regain many of the functions of his missing arm, including the ability to play the guitar.



CONCLUSION

Bionic arm technology is rapidly advancing, and the future looks bright for individuals with limb loss. With innovative new products and cutting-edge research, we can expect to see even more breakthroughs in the years to come. We hope that this newsletter has provided you with valuable information about the latest developments in bionic arm technology, and we look forward to bring you more news and updates in future.

ABOUT

STEMROBO TECHNOLOGIES



STEMROBO Technologies Pvt Ltd is an Indian company that provides education and training services in the field of STEM (Science, Technology, Engineering, and Mathematics) and robotics. The company's aim is to promote hands-on learning and innovation among young students by providing them with educational kits, training programs, and workshops.

Stemrobo Technologies Pvt Ltd offers a range of products and services, including robotics kits, coding kits, and educational software. The company's products are designed to be user-friendly and provide a fun and engaging way for students to learn about STEM subjects. In addition to its educational products, Stemrobo Technologies Pvt Ltd also conducts workshops and training programs for students, teachers, and educational institutions. These programs are designed to help participants learn the basics of robotics and coding, and develop their skills in these areas.

Importance of STEM Education for Kids

The term "STEM" typically refers to a group of academic disciplines that are focused on science, technology, engineering, and mathematics. It prepares them for the future by building problem-solving skills, encouraging curiosity and exploration, fostering collaboration and communication skills, and addressing global challenges that require STEM principles for their solution.

AUGUST 2025

About Robotics Lab



The Robotics Lab is a dedicated workspace where students can learn, experiment, and transform their ideas into prototypes. Designed to foster creativity beyond rote learning, the lab encourages students to explore futuristic skills such as design and computational thinking, adaptive learning, and artificial intelligence.

Equipped with state-of-the-art tools and equipment like 3D printers, robotics kits, and electronic components, the Robotics Lab provides a hands-on learning experience in science, technology, engineering, and mathematics (STEM) fields. The primary goal is to cultivate problem-solving and critical thinking skills from an early age. By promoting experimentation and innovation, the lab aims to nurture the next generation of innovators and entrepreneurs, preparing them for future challenges and contributing to the overall development of India's technological landscape.



BIONIC ARM FUN FACT

A prosthesis is actually an artificial leg, limb or arm that is put in place of an original leg, arm or limb that was lost in birth or in an accident.

AUGUST 2025

GLIMPSE OF ACTIVITIES

Grade I – Linkage Box Magic Straws and Connectors

Students used colorful straws and connectors to build 3D models, boosting creativity, spatial awareness, and problem-solving skills.

Activities included:

- **Sun Dial:** Learned how shadows change with the sun's movement. Students observed how time can be measured naturally.
- **Pyramid:** Explored triangular shapes and strong base structures. They understood how pyramids remain stable for centuries.
- **Supermarket:** Explored space organization and structural planning. Students practiced arranging sections in an orderly way.



BIONIC ARM FUN FACT

Most prosthetic wears are designed using titanium, aluminum and carbon fiber.

AUGUST 2025

GLIMPSE OF ACTIVITIES

Grade II – Linkage Box Magic Straws and Connectors

The Linkage Box with colorful straws and connectors allowed students to build imaginative and creative 3D models, enhancing spatial skills, problem-solving ability, teamwork, and design thinking through engaging hands-on exploration.

Activities included:

- **School:** Learned about planning classrooms, playgrounds, and open spaces within a structured design.
- **Apartment:** Explored detailed floor layouts and understood how multiple families can live together in harmony.
- **Multistory Building:** Understood vertical design, balance, and the importance of strong foundations for tall structures.



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AUGUST 2025

GLIMPSE OF ACTIVITIES

Grade III – Dark Room Safety Alarm & Torch Light

The Smart Circuit Kit and Micro:bit allowed students to explore electronics and coding through hands-on activities, enhancing problem-solving, creativity, and logical thinking.

Activities included:

- **Dark Room Safety Alarm (Smart Circuit Kit):** Designed a safety alarm that activates in darkness, learning about light sensors, circuits, and safety applications.
- **Torch Light (Smart Circuit Kit):** Built a working torch light, understanding switches, connections, and practical uses of simple circuits.
- **Counter (Micro:bit):** Programmed a digital counter using Microsoft MakeCode, learning coding logic, counting mechanisms, and display outputs.



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AUGUST 2025

GLIMPSE OF ACTIVITIES

Grade IV – Smart Circuit Kit Activities

Using the Smart Circuit Kit, students explored electronics and coding to create practical and interactive projects, enhancing creativity, logical thinking, and hands-on problem-solving.

Activities included:

- **Car Music Volume Control:** Designed a system to control music volume, learning about resistors, variable controls, and circuit functionality.
- **Fire Alarm System:** Built a fire alarm model that responds to heat/smoke conditions, understanding sensors, safety mechanisms, and real-life applications.
- **Fan Regulator:** Created a working fan regulator to adjust speed, exploring variable resistance, current flow, and appliance control.



BIONIC ARM FUN FACT

The oldest prosthetic wear was found in the year 2000 in the city of Cairo. It was a prosthetic toe made of wood and leather and dated back to 3000 years.

AUGUST 2025

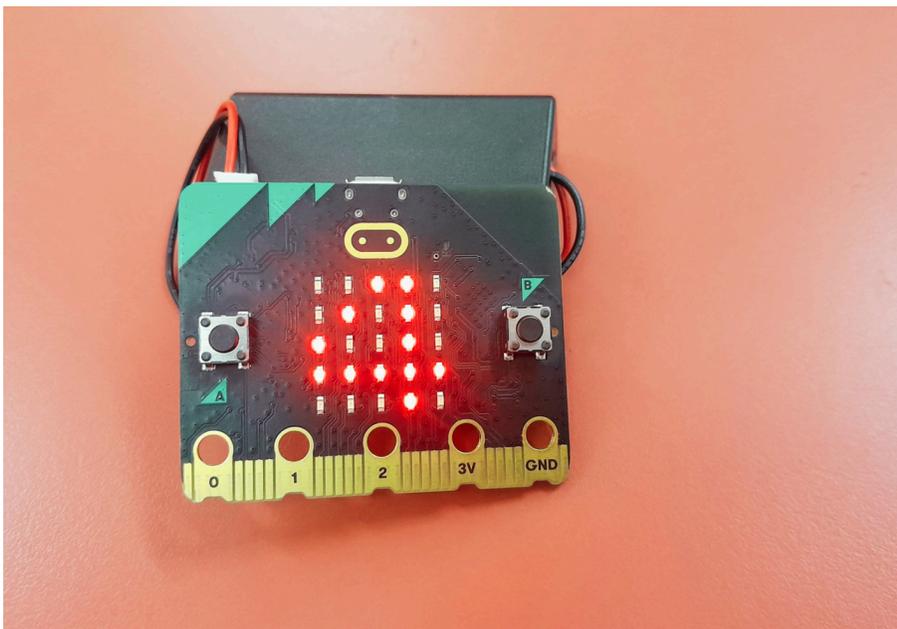
GLIMPSE OF ACTIVITIES

Grade V – Micro:bit Activities

Using Micro:bit with Microsoft MakeCode, students explored advanced electronics and coding through interactive projects, enhancing logical thinking, creativity, and practical problem-solving.

Activities included:

- **Name Badge:** Programmed a scrolling digital badge to display names, learning about LED matrix control, text display, and personalization.
- **Clap Heart:** Designed a heart animation that responds to claps, exploring sound sensing, coding logic, and interactive feedback.
- **Sunlight Sensor:** Built a sunlight detection system, understanding light sensors, environmental monitoring, and real-world applications of automation.



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AUGUST 2025

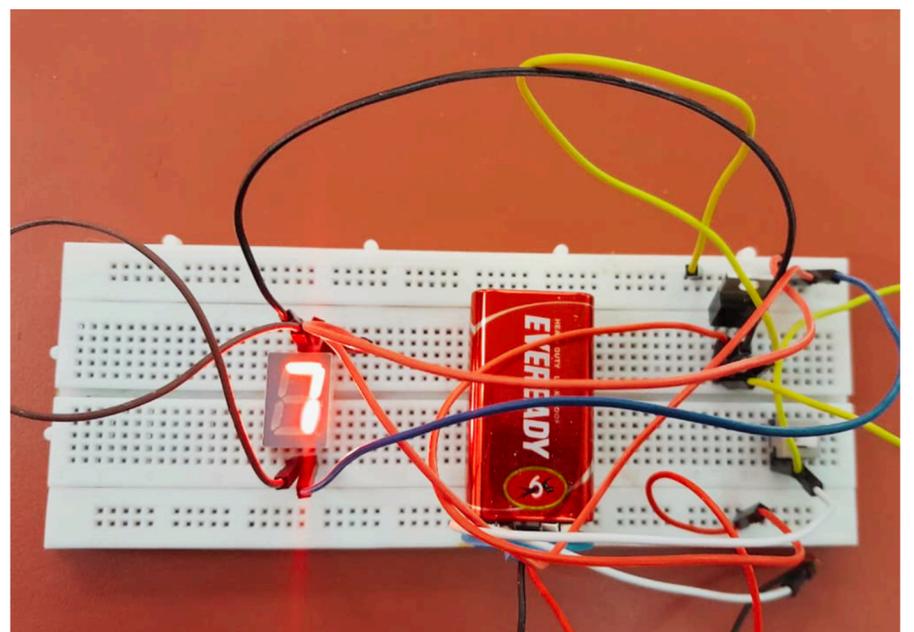
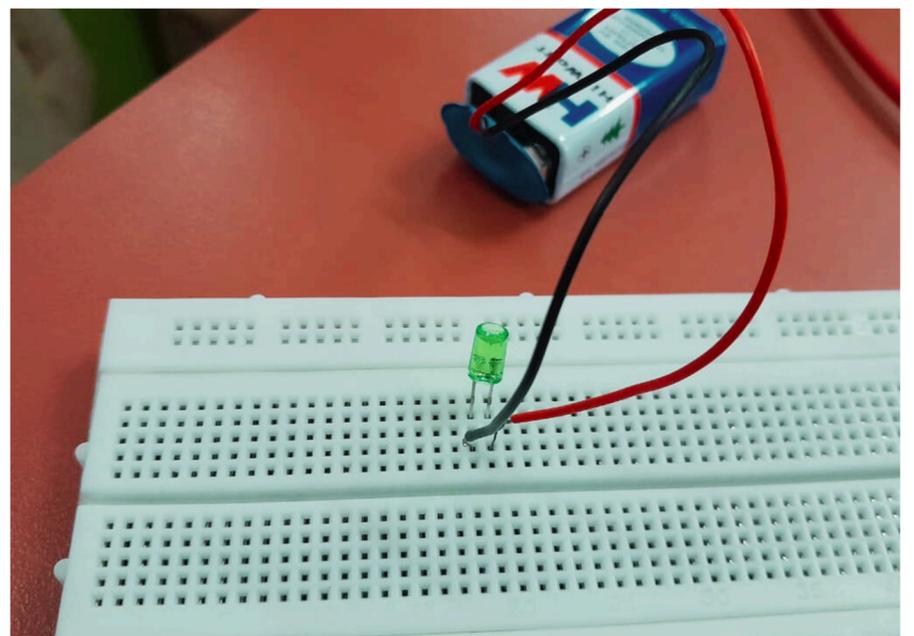
GLIMPSE OF ACTIVITIES

Grade VI – Arduino Nano Activities

Using the Arduino Nano, students explored robotics and electronics programming, enhancing coding skills, logical thinking, and hands-on problem-solving.

Activities included:

- **Introduction (Introduction to Controller and Basics of Electronic Components):** Learned about Arduino Nano, wiring, and basic components like LEDs, resistors, and push buttons, building a strong foundation in electronics.
- **Basics of Arduino Robotics Kit (Alternative LED Flashing):** Programmed LEDs to flash alternately, learning about sequencing, timing, and basic robotics concepts.
- **Digital and Analog Data (Switching On/Off LED Using Push Button):** Controlled LEDs using push buttons, understanding digital and analog signals, input/output interactions, and fundamental electronics principles.



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AUGUST 2025

GLIMPSE OF ACTIVITIES

Grade VII – Arduino Nano Activities

Using the Arduino Nano, students explored advanced robotics and sensor-based automation, enhancing programming skills, problem-solving, and practical understanding of electronics and control systems.

Activities included:

- **Smart Power Saver System (Automatic Street Light):** Built an automatic street light that turns on in darkness and off in daylight, learning about power saving, sensors, and real-world automation.
- **Ultrasonic Sensor Interfacing (Distance Calculator):** Programmed Arduino with an ultrasonic sensor to measure distance, understanding sensor working, coding logic, and practical applications like parking assistance.



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AUGUST 2025

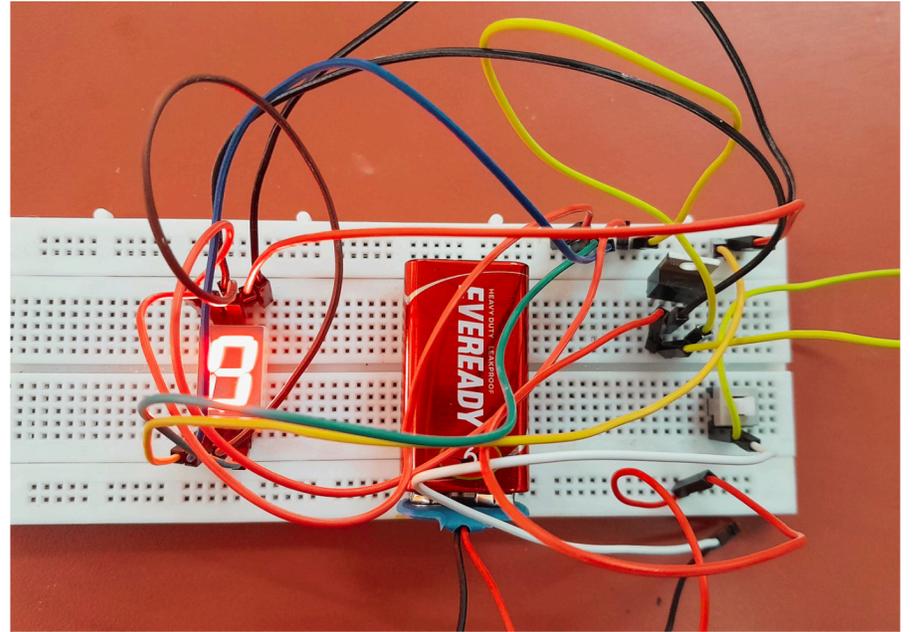
GLIMPSE OF ACTIVITIES

Grade VIII – Arduino Nano Activities

Using Arduino Nano, students explored electronics and automation projects, enhancing coding skills, circuit design knowledge, and real-world problem-solving abilities.

Activities included:

- **RGB Disco Light:** Programmed RGB LEDs to create colorful disco light patterns, learning about PWM control, color mixing, and creative electronics.
- **Seven Segment Display Interfacing:** Controlled a seven-segment display using Arduino, understanding number representation, multiplexing, and digital outputs.
- **Smart Power Saver System (Automatic Street Light):** Built an automatic street light that switches on in darkness and off in daylight, learning about energy conservation and sensor-based automation.
- **Intruder Alarm System:** Designed a security system that detects unauthorized entry, exploring sensors, alarms, and real-world safety applications.



BIONIC ARM FUN FACT

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GLIMPSE OF PROJECTS

List of Project

- Smart Watch
- Smart Dustbin Game



BIONIC ARM QUOTE

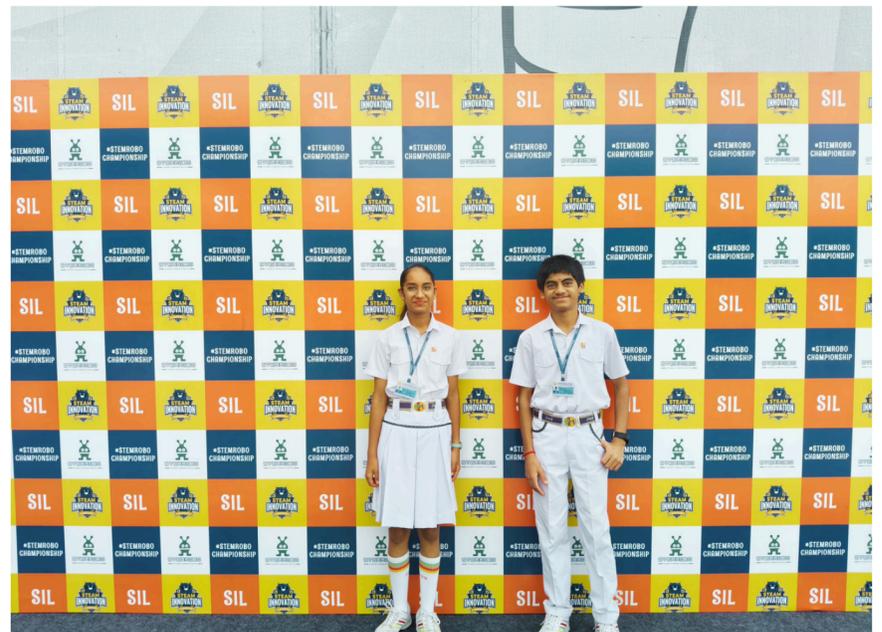
The bionic arm is not just a replacement for what was lost; it's a symbol of resilience, a testament to the unyielding human spirit that refuses to be defined by limitations.



ACHIEVEMENTS

Students from the **JMIS Stemrobo Lab** have successfully demonstrated their innovation and technical skills at reputed competitions. They participated in the **SIL International Competition** with the project **Smart Watch** and at the **K. C. Garg Memorial Inter-School Tech Symposium** with the project **Smart Dustbin Video Game**, both designed and developed within the school's Stemrobo Lab. These achievements reflect their creativity, problem-solving ability, and effective application of STEM learning.

Through such platforms, our students gained valuable exposure to global and inter-school competition standards. Their consistent efforts highlight the lab's role in nurturing future-ready innovators and leaders in technology.





THANK YOU



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