

# Girls stepping into THE WORLD OF ROBOTICS

MAHPARA FAATIN

Robotics is an exciting and rapidly growing field where creativity meets logic and innovation becomes reality. While it has traditionally been seen as a male-dominated field – often discouraging girls through stereotypes, lack of representation, and limited financial and emotional support – this is quickly changing.

Bangladesh, often overlooked in global tech discussions, has quietly cultivated a thriving robotics culture, particularly for young women. In fact, the national team that earned two gold, four silver, and four bronze medals in the 26th International Robot Olympiad (IRO) held in Busan, South Korea, marked a significant milestone for girls in robotics. Six out of ten members of that amazing team were women. For any girl who's curious about robotics but unsure how to start, there's never been a better time to dive in.

As robots are basically computers and do not understand human language, at least not directly, our only way of communicating with or commanding these robots is through programming languages. Hence, it is essential that you get comfortable with coding first before getting into the hardware side of robotics.

Your entry into coding doesn't necessarily have to be through robotics. Nasheetat Zainah Rahman, a three-time gold medallist at the IRO, entered the world of coding through basic game development.

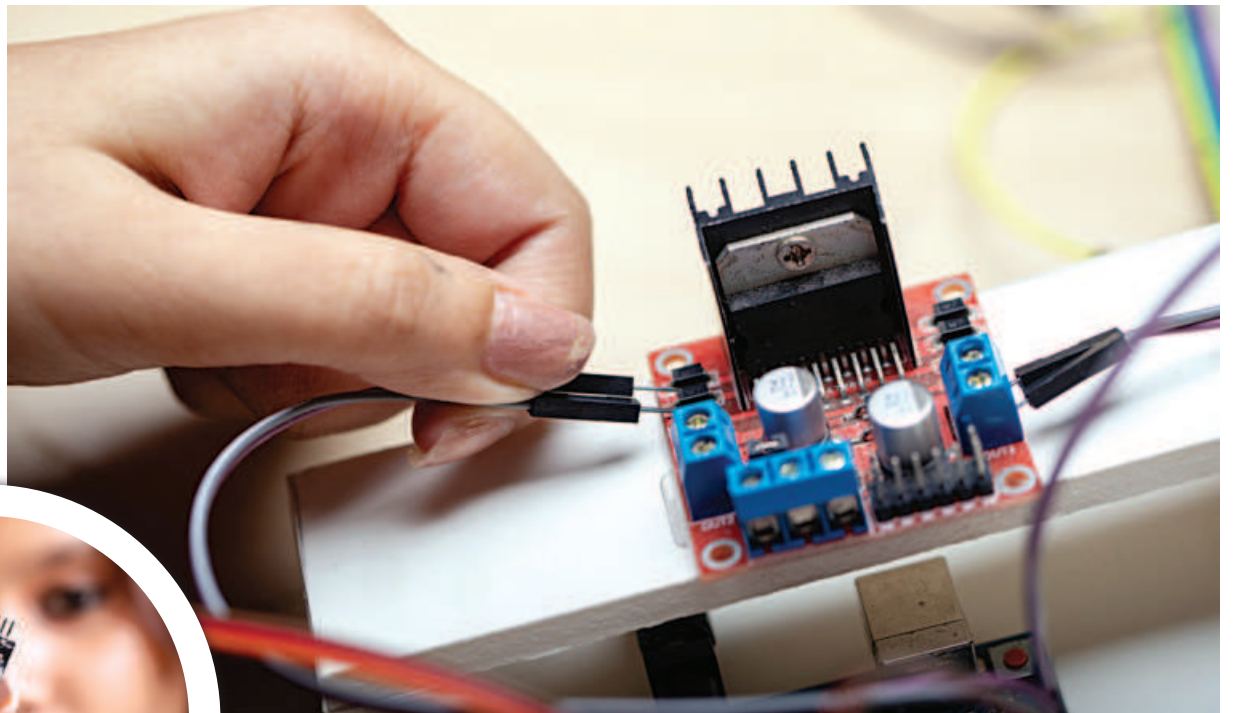
"Since I loved gaming so much, my mom introduced me to Scratch – a block-based programming platform, says Nasheetat. "The ability to create my own games felt almost magical. It was my first step into the world of programming."

"At the same time, I had a deep love for LEGO, and when I discovered the LEGO Mindstorms EV3 robotics kit, I was instantly captivated by the idea of building and programming my own robot. That was the moment when my robotics journey began," Nasheetat adds.

Nasheetat recommends learning Python if you plan to work with Raspberry Pi kits and C++ if you plan to use Arduino. While both Raspberry Pi and Arduino are used in robotics, the latter is preferred for beginners while the Raspberry Pi is a better option for advanced robotics projects.

Once you grasp the basics, consider working on simple projects like obstacle-avoiding or line-following robots. If your school doesn't have a dedicated robotics club for you to seek help, there are various Facebook and Reddit communities that you can turn to. A major advantage for beginners is that tutorials for basic robotics projects are readily available on YouTube, so you can easily find step-by-step guides on how to get started with these projects. Once you familiarise yourself with the basics, you can think of attending workshops organised by various schools, universities, and organisations to learn more. These workshops are usually open to all, and Nasheetat, in particular, benefited from them.

"Eager to learn more, I attended an Arduino workshop which introduced me to more advanced robotics concepts," says Nasheetat. "It was also there that I first heard about the Bangladesh Robot Olympiad – a discovery that led to years of participating in competitions, countless hours of building



PHOTOS: ORCHID CHAKMA

and coding, and an ever-growing passion for robotics."

Attending robotic workshops also gives you an opportunity to seek professional feedback on your projects.

Similar feedback can be obtained if you attend science fairs or participate in local robot olympiads. "Attending workshops organised by the Bangladesh Robot Olympiad (BDRO), in particular, will be immensely helpful here," says Namia Rauzat Nubala, a ninth-grader IRO gold medallist from HURDCO International School. "You can learn about robotics as well as prepare for the national rounds of the robotics olympiads."

Dedicated robotics workshops for girls are also organised frequently by these organisations. Similar initiatives are also taken by various independent communities and clubs to encourage more women to involve themselves in robotics.

As for the components needed to build robots, you can find them in local hardware stores. Most students and robotics enthusiasts, however, opt for online shops like RoboticsBD and TechShopbd to get the necessary hardware. One major advantage of buying from these online stores is that they deliver all over the country. For advanced projects, if you need special kits or components, some of these stores have the option to pre-order them.

Know that it's never too late to join robotics. Maisha Sobhan, a student at the Institute of Business Administration (IBA), Jahangirnagar University, and an IRO gold medallist, ventured into robotics only after finishing her SSC exams in 2022. "I mainly relied on online resources to teach myself from scratch with slight aid from a tutor," she shares. In just a few months, she went from being a beginner to a national-level competitor.

Beyond the technology itself, learning robotics builds essential skills like critical thinking, creativity, problem-solving, and teamwork. Practical experience in this field also makes you a more competitive candidate when applying to universities abroad. Many past Bangladeshi IRO participants went on to study at prestigious universities around the world with scholarships.

Getting into the national team has its own perks. "My favourite part of doing robotics was probably the fact that I got to stay in a foreign country for a week with my friends, says Maisha. "The journey as a whole was very delightful and allowed me to learn and experience many new things."

All that being said, the path isn't always smooth for girls looking to get into robotics. Societal barriers remain, and girls are often discouraged from pursuing robotics, as the lack of local female role models makes it appear as a masculine field to many parents. This prejudice stems from our gendered upbringing that caters to the patriarchal roles assigned to us: boys are made to play with toy robots and build with LEGO, while girls are given Barbie dolls to play house with. A study by the Institution of Engineering and Technology (IET) found that only 11 percent of STEM toys were marketed to girls, reinforcing early ideas about who "belongs" in tech. This conditioning feeds into later under-representation.

"One thing that's still common, sadly, is the misconception that girls don't know how to work with hardware, so girls are thought to be less capable in robotics," says Maisha.

Concerns around safety and gender-based harassment further limit participation in public tech spaces. Such barriers to entry mean parents are often less willing to invest the same time, effort, and money into helping their daughters get into this field as they might be for their sons, mostly due to scepticism about whether their daughters' tech ambitions will lead to tangible success.

Thus, getting started with robotics as a girl doesn't just change your life; in a way, it changes the field itself. After all, it challenges stereotypes, diversifies innovation, and empowers the next generation of girls. You might not have had role models growing up, but you can be one for someone else.

As a final word of advice, Maisha says, "Believe in yourselves. I used to think I was just lucky, but I realised my hard work mattered. Believing in yourself gets you halfway there—the rest is consistency."