Young Hans

Coding for inclusion: How a teen innovator is transforming learning for students

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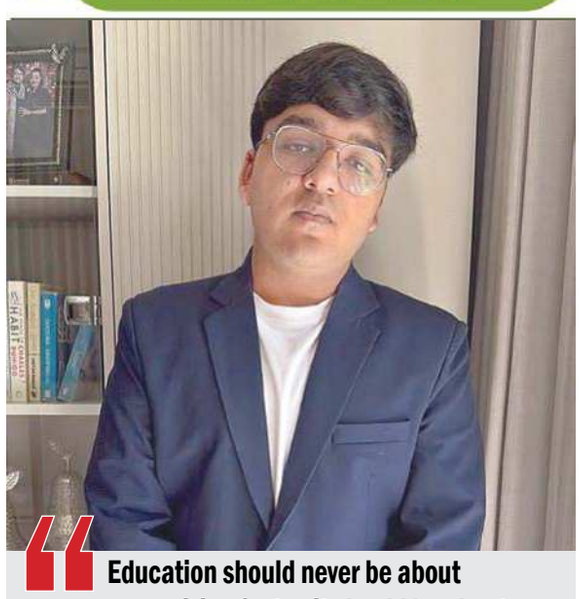
Meet the 17yrs innovator Arv Jakhodia, a Grade 12 student at The Shri Ram School – Aravali, is proving that innovation in education doesn't have to wait for adulthood. Driven by empathy and curiosity, Arv has developed Samanta, an educational app that reimagines how students—particularly those who are neurodiverse—learn business studies.

Samanta simplifies complex business concepts through interactive games, short videos, and visual aids, creating an experience that's intuitive, playful, and accessible. Already piloted in classrooms, the app has made a tangible difference—impacting over 30 students, logging 50+ browser plays and 150+ site visits, and earning partnerships with the National Institute of Open Schooling (NIOS) and Pallavanjali School.

His innovation has also earned him the CREST Gold Award from the British Science Association and a nomination for the Inspire-Manak Award 2025 by India's Department of Science & Technology. In this exclusive conversation, Arv discusses his inspiration, challenges, and hopes for making learning more inclusive for all.

INTERVIEW



"Education should never be about memorizing facts—it should be about understanding ideas. with samanta, i wanted to create a space where every student, regardless of how they learn, feels included and capable. technology gives us the power to make learning equal, engaging, and personal. if we can adapt apps to users, why can't we adapt classrooms to students?

– Arv Jakhodia

Excerpts from an interview with Young Hans featuring Arv Jakhodia

What inspired you to create Samanta and focus on neurodiverse learners?

I always disliked the rote-learning culture in classrooms. Especially in business studies—students often memorized answers without understanding them. I saw how many of my peers, particularly neurodiverse learners, struggled not because they lacked intelligence but because the system didn't meet them where they were. I wanted to change that by making learning visual, interactive, and joyful.

How does the app's use of games and videos differ from traditional teaching?

Traditional classrooms are fast-paced and noisy. Samanta breaks lessons down into short, manageable segments—through videos, quizzes, and games—so students can learn at their own pace. It caters to visual, auditory, and kinesthetic learners, ensuring that everyone—regardless of learning style—can grasp complex ideas easily.

How do you balance schoolwork with app development?

It's not easy, I dedicate 1–2 hours daily to coding and extra time on weekends. Working with teachers and peers helps me refine the app while keeping up with academics. Once people saw what Samanta could do, it started to grow organically—its quality spoke for itself.

How have awards influenced your motivation?

The recognition from the British Science Association and INSPIRE-MANAK has been incredible. It validated my belief in Samanta's purpose and inspired me to expand it. My goal is to make Samanta the go-to platform for inclusive learning everywhere neurodivergent students are supported.

What role should technology play in inclusive education?

In today's world, everything adapts to technology—except education. When used thoughtfully, technology can personalize lessons and remove barriers of pace or style. It allows students to learn for understanding, not memorization. It's the bridge to make learning truly equal for everyone.

What feedback made you realize Samanta's impact?

A visit to Pallavanjali School, I asked students if they preferred rote learning or learning through games. They all said, 'Games are more fun!' Their excitement during the session—the smiles, the eagerness to answer—was my real reward. Even the teachers, who were initially unsure, later praised how Samanta simplified learning and reduced their workload. That moment assured me this project mattered.

What's next for Samanta?

Business studies is just the start, I plan to expand Samanta beyond NIOS subjects, offering skill-based learning that schools often overlook—like financial literacy or communication. I want Samanta to grow from an app into a movement that changes how teaching happens across classrooms in India and beyond.

What are your future plans?

After school, I plan to study AI integration, information systems, or UX design. I want to keep building Samanta—adding more features, games, and accessibility tools to make neurodivergent learning more powerful. My goal is to merge human-centered design with computer science to create education technology that truly transforms lives.

In an age where technology often feels impersonal, Arv Jakhodia reminds us that innovation rooted in empathy can redefine how we learn. With Samanta, he's not just teaching students—he's reshaping the classroom itself, one inclusive experience at a time.

IT careers: Key roles and skills for the future

The world of Information Technology (IT) is constantly changing, and professionals in this field need to adapt by developing new skills, embracing emerging roles, and aligning their careers with industry demands. As businesses increasingly rely on technology for operations, communication, and innovation, IT professionals play a critical role in shaping the future of work.

Key roles in IT

IT offers a wide range of roles suited to different interests, expertise levels, and career goals. Some of the most sought-after roles include:

1. Software Developer – They design, develop, and maintain applications and software solutions for businesses and consumers. Programming languages such as Python, Java, and C++ are essential in this role.
2. Data Analyst/Data Scientist – These professionals analyze large datasets to extract actionable insights. Skills like statistical analysis, machine learning, and data visualization tools are key.
3. Cybersecurity Specialist – Protecting sensitive information and infrastructure from cyber threats, these experts need knowledge of encryption, threat modeling, and ethical hacking.
4. Cloud Engineer – As organizations move to cloud platforms like AWS, Azure, and Google Cloud, cloud engineers deploy and manage cloud services and infrastructure.
5. DevOps Engineer – They streamline software development and deployment processes, ensuring continuous integration and delivery, using tools like Docker, Kubernetes, and Jenkins.
6. Network Administrator – They maintain hardware and software networks, ensuring optimal performance and resolving technical issues.

Skills every IT professional needs

The rapid pace of change in technology means that IT professionals must constantly update their knowledge and skills. Some essential skills include:

- Technical proficiency – Understanding programming languages, operating systems, and tools specific to the role.
- Problem-solving ability – Diagnosing issues, troubleshooting errors, and implementing solutions under time constraints.
- Adaptability – Staying updated with the latest technologies, frameworks, and industry trends.
- Communication skills – Collaborating with cross-functional teams, explaining technical concepts clearly to non-technical stakeholders.
- Cyber awareness – Recognizing and preventing security threats and breaches.
- Project management – Organizing tasks, managing timelines, and coordinating teams effectively.

Building a successful IT career

For those starting or advancing in IT, building a career requires intentional learning and strategic planning:

- Certifications – Earning certifications like AWS Certified Solutions Architect, Certified Ethical Hacker (CEH), or Microsoft Certified can open doors to higher-paying and specialized roles.
- Networking – Joining professional groups, attending conferences, and contributing to open-source projects helps build relationships and credibility.
- Continuous learning – Online courses, webinars, and workshops are essential for keeping pace with industry developments.
- Real-world experience – Internships, freelance projects, and part-time roles allow hands-on learning and practical exposure.

Future outlook

With automation, artificial intelligence (AI), and machine learning transforming workplaces, the demand for IT professionals is expected to grow. Roles that require human creativity, ethical judgment, and advanced technical expertise will be highly valued. As technology becomes more integrated into everyday life, professionals who embrace lifelong learning and versatility will thrive.

In conclusion, an IT career offers diverse opportunities, requires a dynamic skill set, and demands a commitment to ongoing learning. With the right approach, professionals can build fulfilling careers while driving innovation and solving some of the world's most complex problems.

IIT Madras aces vertical take-off and landing in aircraft, UAVs with hybrid rocket thrusters

Researchers at the Indian Institute of Technology (IIT) Madras have taken India a step closer to advancing vertical take-off and landing (VTOL) aircraft and an Unmanned Aerial Vehicle (UAV) with hybrid rocket thrusters.

In a sophisticated experiment that combined a real-time hybrid rocket thruster with a virtual simulation, the researchers achieved the necessary velocity for 'soft landing' -- a crucial feature for all craft ranging from planetary landing of an unmanned or manned exploration module to terrestrial landing of a VTOL aircraft.

Touchdown velocity is an important parameter to ensure safe vertical landings.

Researchers studied the feasibility of using the hybrid rocket motor for vertical landing platforms, as they are less complicated and safer compared to liquid engines. Moreover, hybrid rocket systems are gaining popularity due to their inherent safety and throttling capabilities, apart from the possibility of combining the advantages of liquid and solid rocket engines.

Currently, VTOL systems are complex and need high maintenance. Therefore, the research, published in the peer-reviewed International Journal of Aeronautical and Space Sciences, conceived the concept of a hybrid rocket thruster-powered platform as part of a system development study to bring out an effective propulsion unit for achieving VTOL in aircraft and UAVs.

"Vertical take-off and landing, as the name suggests, will enable an aircraft to take off and land vertically, eliminating the need for infrastructure like long runways. Because of this, VTOL capability will enable access to remote locations and rugged terrains where long runways and large airports are difficult to establish. Currently, helicopters are the system operating on those terrains; however, they face limitations in terms of speed, range, and efficiency compared to a fixed-wing aircraft," said Prof. PA Ramakrishna, Department of Aerospace Engineering, IIT Madras.

"Once the VTOL system reaches the Technology Readiness Level (TRL) for commercial application, it will be a game-changer in both civil and military aviation. VTOL will help to decentralise air transport to multiple locations rather than a single big airport or an airbase. Such decentralisation brings significant strategic and operational advantages. This study is a precursor towards the development and demonstration of a proof-of-concept for a hybrid rocket-powered VTOL platform," Ramakrishna added.

The experts highlighted that a significant contribution is the development of a hybrid rocket fuel that needs only compressed air as the oxidiser. This makes VTOL systems easier to integrate with aerospace vehicles, especially in scenarios where compressed air is readily available.

"Another interesting aspect of this work is the unique Hardware-in-the-Loop Simulation (HILS) framework that IIT Madras researchers have developed. HILS combines physical hardware testing with simulations to offer a cost-effective way to quickly develop complex systems," said Dr. Joel George Manathara, Associate Professor, Department of Aerospace Engineering, IIT Madras. He explained that while typical HILS setups involve a servo motor or microcontroller as the hardware interacting with the simulation, the team integrated a real, live-firing hybrid rocket motor directly into the HILS loop. The hardware-in-the-loop simulation setup demonstrated a successful soft landing of the platform with a touchdown velocity of less than 1 m/s.

The importance of project management in achieving organizational success

Project management is a crucial discipline that ensures the successful initiation, planning, execution, monitoring, and completion of projects within organizations. It provides a structured approach to achieving specific goals by effectively managing time, cost, scope, and quality. In today's dynamic business environment, where competition and technological changes are constant, project management helps organizations remain organized, efficient, and adaptable.

A well-managed project begins with a clear understanding of objectives, resource allocation, and stakeholder expectations. Through tools such as Gantt charts, risk assessments, and progress tracking systems, project managers can monitor performance and address challenges proactively. Communication plays a central role, ensuring that all team members and stakeholders remain informed and aligned throughout the project lifecycle.

Moreover, project management fosters teamwork, accountability, and innovation. It helps identify potential risks early and provides strategies for mitigation, preventing costly delays or failures. Frameworks such as Agile, Scrum, and Waterfall offer different approaches to managing projects depending on the organization's needs and goals. Ultimately, effective project management contributes directly to organizational success by improving productivity, optimizing resource use, and delivering results that meet or exceed expectations.

Students soar high at National Model Rocketry and CANSAT competition

A hub of scientific curiosity and youthful innovation as the IN-SPACe Model Rocketry and CANSAT India Student Competition 2024–25 concluded after four days of intense, hands-on learning and competition.

Organised jointly by the Indian National Space Promotion and Authorisation Centre (IN-SPACe), ISRO, and the Astronautical Society of India (ASI) — with support from the Government of Uttar Pradesh and local administration — the event brought together 67 student teams from across India. The participants represented some of the country's most promising young innovators in rocketry and satellite systems, demonstrating how teamwork and experimentation are driving the next generation of space talent.

A total of 37 launches — 13 in the Model Rocketry and 24 in the CANSAT category — were conducted successfully, showcasing both technical skill and creative design. The teams were evaluated by a jury of scientists from ISRO and IN-SPACe on a range of parameters including structure, recovery systems, mission execution, and data analysis.

In the Model Rocketry category, R.V. College of Engineering, Bengaluru, emerged as the top performer, while SVKM's Dwarkadas J. Sanghvi College of Engineering, Mumbai, claimed first place in the CANSAT segment. They triumphed over strong competition from leading institutions such as PSIT Kanpur, Nirma University Ahmedabad, BITS Pilani Hyderabad, and Dayanand Sagar College of Engineering Bengaluru.

While competition was fierce, the spirit of collaboration and learning was evident throughout the event. Students spent days refining their models, running last-minute tests, and working through real-time challenges in design, simulation, and telemetry. The environment encouraged peer learning, mentorship, and innovation under pressure — a true reflection of the "learning by doing" approach central to modern engineering education.

The competition also served as a meeting ground between young innovators and India's leading space scientists. During interactions and mentorship sessions, students gained insights into mission design, propulsion, avionics, and sustainable technologies for space exploration. Experts emphasised how such experiences help participants apply classroom knowledge to real-world systems — an essential skill for future aerospace professionals.

In the Model Rocketry segment, teams were judged on parameters like flight performance, descent and recovery systems, and post-launch data analysis. Meanwhile, in the CANSAT challenge, students built miniature satellite prototypes capable of carrying sensors, collecting atmospheric data, and executing controlled descent missions. The integration of coding, electronics, and mechanical design tested both technical acumen and teamwork.

Beyond the competition, the event fostered wider community engagement. A space exhibition drew over 650 school students from nearby districts, allowing them to interact directly with participating teams and gain exposure to rocketry and satellite-building concepts. The exhibition also showcased winning artworks from ASI's "Art-in-Space" and "Space Quiz 20:20" outreach programmes, which together reached nearly 75,000 students across seven districts of Uttar Pradesh.

Adding a unique learning dimension, the event featured an Analog Astronaut Training Habitat, set up by AAKA Space, where students underwent simulated astronaut missions — experiencing the demands of life in space through controlled exercises in a 24-hour training module. For many participants, it was their first exposure to astronaut training concepts and mission-based teamwork.

The closing ceremony celebrated not just winners but every team's perseverance, curiosity, and dedication to innovation. Certificates were awarded to all participants, recognising their contribution to advancing student-led research and practical learning in space sciences.

More than a contest of rockets and satellites, the event became a platform where engineering met imagination — where young minds learned to translate theory into creation and challenges into opportunities. For students across India, it was a reminder that the future of space exploration will be shaped not only in labs and institutions but also through competitions like these, where learning takes flight in the truest sense.