IEEE STUDENT BRANCH, USAR
University School of Automation and Robotics
Guru Gobind Singh Indraprastha University, East Delhi Campus

ELYSIAN ’26 · OFFICIAL EVENT REPORT

HARDWARE HACKFEST 3.0

INVENTRON: A HARDWARE HACKATHON

with the F1-Themed Escape Room and Pitch the Pointless

21–22 October 2026 · C-006, USAR, GGSIPU East Delhi Campus

Organising body	IEEE Student Branch, University School of Automation and Robotics (USAR)
Institution	Guru Gobind Singh Indraprastha University (GGSIPU), East Delhi Campus
Festival	Elysian ’26 (Elysian Tech Fest)
Events	Hardware Hackathon (Inventron) · F1-Themed Escape Room · Pitch the Pointless
Submitted to	Prof. Arvinder Kaur, Dean, USAR
Submission date	29 October 2026

Submitted by
IEEE Student Branch, University School of Automation and Robotics (USAR)

Executive Summary

Hardware Hackfest 3.0, presented as INVENTRON: A Hardware Hackathon, is the third edition of the flagship hardware event of the IEEE Student Branch, USAR. Organised as part of Elysian '26 on 21–22 October 2026 at C-006, USAR, the hackathon invited students to turn ideas in embedded systems, IoT, robotics, automation and intelligent systems into working hardware over two days of non-stop building.

The hackathon was open to students currently enrolled in colleges and universities in Delhi, in teams of two to three. Teams first submitted their idea on Unstop, including the problem, the proposed solution, the hardware architecture and system workflow, and the role of the Shrike-Fi board supplied by Vicharak. The top 10 shortlisted teams were then invited to the GGSIPU East Delhi Campus for on-campus prototyping on 21 October, and presented their projects to the judging panel on 22 October.

Two mini events ran alongside the hackathon: Code Red: Pit Lane Lockdown, an F1-themed online escape room in which teams cracked five puzzle "sectors" to release a locked race car, and Pitch the Pointless, a light-hearted startup-style pitching contest. Together they brought serious engineering and fun under one roof and widened participation beyond the hackathon teams.

2	3	10
DAYS OF NON-STOP BUILDING	EVENTS IN ONE FEST	TEAMS SHORTLISTED TO BUILD

1. Event Overview

Item	Details
Event name	Hardware Hackfest 3.0 presents INVENTRON: A Hardware Hackathon
Organiser	IEEE Student Branch, USAR
Festival	Elysian '26, GGSIPU East Delhi Campus
Dates	21–22 October 2026 (Day 1: 21 October; Day 2: 22 October)
Venue	C-006, University School of Automation and Robotics
Format	Two-day offline hardware hackathon with two parallel mini events
Eligibility	Students currently enrolled in colleges or universities in Delhi
Team size	2–3 members
Focus areas	Embedded systems, IoT, robotics, automation, intelligent systems and other hardware-oriented applications (Track 1: Edge AI and TinyML)
Technology partner	Vicharak (Shrike-Fi boards provided to shortlisted teams)
Registration	Via Unstop; closed 20 October 2026
Finalists	Top 10 teams shortlisted from Round 1 (idea and PPT submission)
Judges / evaluators	Dr. Sourabh Anand (Assistant Professor, USAR)

2. Objectives

- Provide hands-on exposure to embedded systems, IoT, robotics and automation through real hardware, with development boards supplied to teams.
- Encourage students to turn an idea into a defined hardware architecture, system workflow and working prototype.

- Give participants access to mentorship and guidance from experts and senior students.
- Build teamwork, time management and presentation skills through a two-day, non-stop build format.
- Keep the wider student community engaged through competitive, creative and fun mini events.
- Continue the legacy of Hardware Hackfest as the signature hardware event of IEEE USAR.

3. Event Structure and Proceedings

The hackathon was open to creative ideas across embedded systems, IoT, robotics, automation, intelligent systems and other hardware-oriented applications, with Track 1 focused on Edge AI and TinyML. Participants were encouraged to experiment, collaborate and turn their concepts into working prototypes. It ran in three rounds.

Round 1: Idea and PPT Submission (Online, on Unstop)

Registration was open on Unstop until 20 October 2026 for teams of 2–3 members enrolled in Delhi colleges or universities. Each team submitted a presentation covering:

- The problem statement and motivation.
- The proposed solution and its real-world application.
- How the Shrike-Fi board would be used in the project; proposals had to clearly identify its role.
- The proposed hardware architecture and system workflow.
- Components, sensors, peripherals and other resources required.
- The implementation plan, feasibility and expected outcome.

Submissions were reviewed and the top 10 teams were shortlisted and invited to the GGSIPU East Delhi Campus during Elysian ’26.

Shortlisted Teams

1. 0xEngineers	**2. Champs**
3. DeadBug	**4. Delphox**
5. TechZen	**6. Team Sahayak**
7. IndicMinds2.0	**8. TaskForce**
9. Matrix	**10. Eagleeye**

Round 2: On-Campus Prototyping (21 October 2026)

The shortlisted teams worked at C-006, USAR in an offline, non-stop prototyping round, implementing, testing and refining their proposed solutions. Each team received access to a Shrike-Fi board provided by Vicharak. Shrike-Fi is a low-cost, open-source board that pairs an ESP32-S3 microcontroller (with Wi-Fi and Bluetooth LE) with a small FPGA, which let teams combine software and programmable hardware in a single project. As highlighted on the event poster, the round was built around four pillars:

- Boards provided: Shrike-Fi development boards were supplied to every shortlisted team.
- Mentorship and expert guidance: mentors were available throughout to help teams with design, debugging and integration.
- Hands-on learning: teams worked directly with hardware, firmware and sensors rather than only on slides.
- Exciting prizes for the top-performing teams.

Round 3: Project Demonstration and Judging (22 October 2026)

On the second day, shortlisted teams demonstrated their working prototypes and presented their projects to the judging panel, led by Dr. Sourabh Anand, Assistant Professor, USAR. Evaluation considered the innovation and originality of the idea and the effective use of Shrike-Fi and its capabilities, along with the quality of the working demonstration and the technical approach.



Participants, organisers and mentors at Hardware Hackfest 3.0 (Inventron), C-006, USAR

4. Mini Events

Code Red: Pit Lane Lockdown (F1-Themed Online Escape Room)

Presented by Elysian × Hardware Hackfest 3.0, Code Red was an F1-themed online escape room team challenge hosted by IEEE USAR. The story: it is Lap 45 of the Grand Prix and malware has locked the pit wall, so car #16 cannot leave its pit box. Each team plays the emergency engineers who must crack five puzzles, called “sectors”, find the release passkey and get the car out before the chequered flag. Everything happened on participants’ laptops in the browser, with internet access allowed.

Teams	1–4 drivers per team
Race time	45 minutes, starting for every team at the same moment (“Lights Out”)
Objective	Clear 5 sectors, combine the five codes to find the release passkey and stop the clock
Format	Online, on laptops; internet, Excel, Python and online converters all allowed

Teams registered a team name, driver names and a 4–6 digit PIN on the game portal and received a three-letter team code, like an F1 driver. Teammates logged in on their own laptops, so the five sectors could be split up and solved in any order. Progress was saved on the server, and each team received its own puzzles and answers generated by the server, so answers could not be copied between teams. When all five sectors turned green, the Pit Release tab unlocked, and the five codes together hid the passkey that stopped the clock.

The Five Sectors

Sector	Skill	What teams did
1 · Strategy Room	Logic	Used clues and a tick/cross grid to work out the order of four cars' pit stops and find the radio code word.
2 · Team Radio	Cipher	Decoded a scrambled radio message by shifting letters with a decoder slider, then answered the riddle in it.
3 · Telemetry	Data	Plotted the right columns of a car sensor data table (CSV available) until a hidden picture appeared.
4 · ECU Software	Coding	Fixed the bugs in a short JavaScript program in a built-in editor and read the unlock code.
5 · CAN Bus	Hex, electronics	Filtered a raw log of car network messages in hexadecimal, ordered them and converted the hex into text.

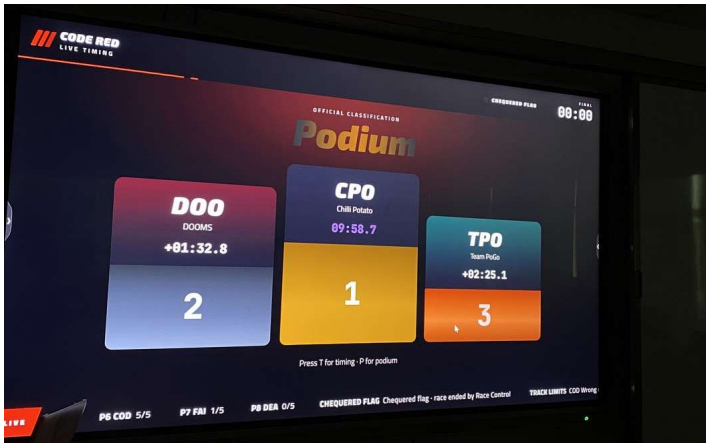
No prior F1 or coding knowledge was needed, since every sector page explained what teams needed, and mixed teams were encouraged.

Hints, Penalties and Scoring

Teams could call the "Safety Car" for hints in each sector at the cost of added time, and penalties applied for wrong answers beyond a free allowance:

Item	Time added
Safety Car hint 1 (a nudge)	+2:00
Safety Car hint 2 (a bigger nudge)	+3:00
Red Flag (shows that sector's answer)	+8:00
Wrong answers in a sector (first 2 free), each thereafter	+0:30
Wrong release passkey	+1:00

A team's result was the race clock at the moment its car was released plus all penalty minutes, and the lowest result won. Teams that did not finish within 45 minutes were ranked after all released teams, first by sectors cleared, then by who cleared their last sector earlier, then by fewer penalty minutes. The first team to clear a sector earned a "purple sector", as for the fastest sector in F1. A big screen showed live timing, a track map with every team's car and Race Control messages. Fair-play rules applied throughout: teams could only help their own team, and attacking the race server meant instant disqualification ("black flag").



Final podium on the live-timing board: Chilli Potato (1st), DOOMS (2nd), Team PoGo (3rd)

Pitch the Pointless

Pitch the Pointless was a high-energy pitching event in which participants presented an absurd, funny product or service in the style of a serious startup pitch. Teams had to build a business story around a deliberately pointless idea, covering the problem, the product, the market and the “ask”, while keeping the audience entertained. The event encouraged creativity, public speaking and quick thinking, and was a crowd favourite.

5. Results and Winning Teams

Position	Participants	Institute
HARDWARE HACKATHON: INVENTRON		
1st	**Team TechZen** Ishaan Maheshwari	Vivekananda Institute of Professional Studies (VIPS)
2nd	**Team Sahayak** Aashi Jindal Aditya Sharma	Vivekananda Institute of Professional Studies (VIPS)
3rd	**Team TaskForce** Tanish Aggarwal	Vivekananda Institute of Professional Studies (VIPS)
F1-THEMED ESCAPE ROOM		
1st	Ishaan Maheshwari Shivam Singh Rathore Raghav Sharma	Vivekananda Institute of Professional Studies (VIPS)
2nd	Aditya Adarsh Dogra	University School of Automation and Robotics (USAR)
3rd	Rishi Thakur Nikhil	University School of Automation and Robotics (USAR)
PITCH THE POINTLESS		
1st	Ishant Shreya Ved	University School of Automation and Robotics (USAR)
2nd	Simardeep Kaur Aditya Adarsh Dogra	University School of Automation and Robotics (USAR)
3rd	Shruti Path Devanganaa Suraj	University School of Automation and Robotics (USAR)

The organisers congratulate all winning teams and thank every participant for their enthusiasm and effort.

6. Outcomes and Impact

- Participants gained practical experience in hardware design, prototyping, debugging and system integration under time pressure.
- The two-stage format (online idea submission followed by an on-campus build) gave teams a complete idea-to-prototype experience.
- Mentorship and supplied boards lowered the entry barrier for students new to hardware.
- The mini events widened participation beyond the hackathon teams and kept the Hackfest atmosphere vibrant throughout Elysian ’26.

- The organising team gained valuable experience in event planning, registration management, logistics and coordination with partners.

7. Acknowledgements

IEEE USAR sincerely thanks Prof. Arvinder Kaur, Dean, USAR, and the university administration for their continued support and guidance. We also thank the Elysian ’26 organisers, technology partner Vicharak, the mentors, judges, faculty coordinators, volunteers and all participants whose involvement made Hardware Hackfest 3.0 a success.

8. Conclusion

Hardware Hackfest 3.0 (Inventron) carried forward the legacy of the event, bringing students together for two days of hands-on building, mentorship and friendly competition, with the F1-themed escape room and Pitch the Pointless adding variety and energy. The event reflects the commitment of IEEE USAR to creating practical, innovation-oriented opportunities for students in hardware and allied technologies.

Date of submission: **29 October 2026**

Annexure: Event Poster and Photographs



Official poster of Hardware Hackfest 3.0: Inventron



A participant demonstrating a drone prototype during the hackathon

Event page: https://unstop.com/hackathons/inventron-guru-gobind-singh-indraprastha-university-ggsipu-delhi-1770718