

## SAT HACK

### Thapar Institute of Engineering and Technology



One team from Jaypee University of Information Technology participated in **SAT HACK 2025**, organized by the Thapar Institute of Engineering and Technology from November 13–14, 2025. SAT HACK is the flagship hackathon of *Saturnalia*, presented by Perplexity Comet, the annual techno-cultural fest of TIET. This year's edition held special significance as it marked the **50th Golden Jubilee** of Saturnalia, making SAT HACK 2025 a larger, more dynamic, and highly competitive event. The project presented was **TRYSHUL (Missile and Jet Tracking Turret)**, developed by first-year BCA students **Atishya, Abhaya Kanwar, Uday, and Rudraksh**, showcasing their innovation and technical skills.

“TRYSHUL” is an autonomous tracking turret designed to detect and follow aerial targets such as missiles and jets in real time. The system integrates computer vision with a 2-axis servo-controlled gimbal to achieve precise tracking. A webcam captures live video, which is processed through a Python-based detection algorithm to identify and lock onto the target.



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The tracking coordinates are then transmitted to an Arduino, which controls the servos to keep the turret accurately aligned with the moving object.

The success of TRYSHUL was the result of effective teamwork, with each member contributing a critical component. Atishya developed the core Python code for object detection and real-time tracking. Abhaya Kanwar handled Arduino programming, fine-tuned servo responsiveness, and managed overall hardware integration. Uday contributed to creating the project presentation, ensuring technical clarity and structured communication. Rudraksh collaborated on preparing and delivering the presentation, effectively highlighting the system's real-world applications and achievements.