



BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT

Autonomous Institute Under VTU, Accredited by NBA and NAAC

Yelahanka, Bengaluru-560119.

Name of the Society:

IEEE Aerospace and Electronic Systems Society (AESS) BMSIT&M Student Branch

Date of Formation:

October 2024

Coordinator:

Dr. Asha K, ECE

Objective:

To advance, promote, and foster the design, development, integration, and operation of complex, multi-disciplinary systems for space, air, ocean, and ground environments.

Frequency of Meetings:

Three team meetings per month, and an Annual General Meeting with all AESS members.

Social media link:

LinkedIn: <https://www.linkedin.com/company/ieee-aess-bmsit>

Instagram: <https://www.instagram.com/aess.bmsit>

Roles and Responsibilities:

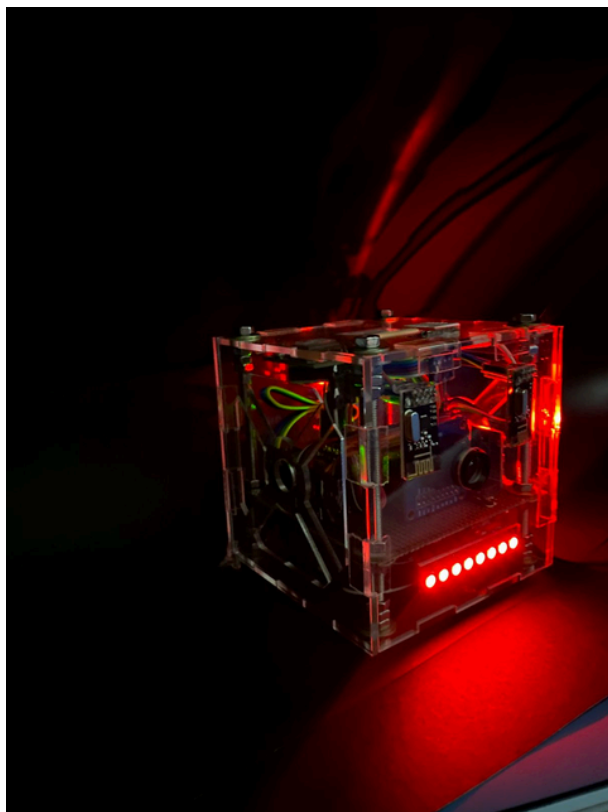
IEEE AESS is an international professional organization committed to promoting the development of engineers in aerospace, electronics, and complex systems engineering by providing opportunities for education and advancement via technical lectures, workshops, projects, and activities on topics such as communications, navigation, radar, signal processing, satellites, and smart systems. The society provides opportunities for building a research culture, cross-disciplinary collaboration, and technical excellence among students. The society provides students with opportunities for interacting with industry and research institutions to improve the professional development of students as well as to raise the visibility of BMS Institute of Technology (BMSIT) through its global engagement with IEEE.

Activities conducted:

The chapter's commitment to excellence extends to national platforms, with members actively participating in **IEEE SPACE 2024 and 2025**. These prestigious conferences provided students with invaluable exposure to high-level innovation and industrial collaboration in the field of aerospace systems. By engaging with national experts and participating in hands-on workshops, members gained deep insights into cutting-edge space technologies. This consistent participation has been instrumental in aligning our chapter's activities with national aerospace trends, fostering a culture of research and ensuring our members remain at the forefront of India's evolving space sector. **NATIONAL LEVEL ENGAGEMENT**



On December 20–21, 2024, the IEEE AESS chapter participated in the "Winter of Projects" at BMSIT&M, a unique initiative that utilized a point-based auction system to assign technical challenges to student teams. Over a two-week development period, AESS-guided teams engineered two high-impact projects: a Remote Controlled (RC) Fixed Wing aircraft and a CubeSat prototype. These solutions were showcased during a two-day exhibition, first to a panel of faculty members and later to students from local government schools to promote STEM outreach. Highlighting the technical excellence of the chapter, the CubeSat project secured 1st place among twenty competing projects from twelve different societies, earning the title of "Best Project" for its innovation and practical design in satellite technology. **WOP 2024**



On December 20–21, 2024, the IEEE AESS chapter introduced "Auto on Wings" during the "Winter of Projects" at BMSIT&M. This highly creative initiative repurposed a decommissioned auto-rickshaw into a private flight simulator cockpit, offering participants an immersive aerial experience for a nominal fee of INR 10. Each participant received personalized instruction on transmitter controls, allowing them to navigate diverse terrains and aircraft types within the unique, modified cabin. By blending local culture with aerospace technology, the event successfully demystified flight mechanics, becoming a standout attraction that boosted society engagement and inspired future interest in aviation. **AUTO ON WINGS**



In December 2024, IEEE AESS BMSIT&M made its grand debut with "mARtian AESSence," a semi-technical flagship event organized in collaboration with the AR VR Hub. Held across the A.P.J. Abdul Kalam and Kalpana Chawla Labs, the two-day competition was designed to establish the chapter's presence while sparking curiosity in aerospace systems. The journey began with "Launching Sequence," where teams had two hours to develop creative solutions for complex aerospace problem statements, followed by the intense "Martian Meltdown" crisis-management round. In this phase, participants acted as leaders of a Mars settlement, navigating a sudden, high-pressure disaster to test their adaptability and prioritization skills, eventually narrowing the field to eight finalist teams. **MARTIAN AESSENCE**

Red Horizon: Building the Martian Future

The final day transitioned into a deep technical dive titled "Red Horizon," focusing on the intersection of space exploration and immersive technology. Participants attended a specialized Unity software workshop, gaining the skills necessary to render planetary environments in virtual reality. Tasked with designing a Martian entertainment district or wildlife sanctuary, teams spent the afternoon modeling alien terrains, fine-tuning aesthetic features, and mastering lighting effects. This final round was judged on both technical execution and creative vision, successfully bridging the gap between imaginative space colonization and practical software engineering. The event effectively solidified AESS's reputation on campus as a hub for interdisciplinary innovation.



With Aero India 2025 happening nearby, we seized the opportunity to engage students in an exciting online event. Given our institute's proximity to the air force station, participants were invited to capture a striking moment of any aircraft in flight during the show and share it with us. The spontaneity of the event added to its charm, making it accessible to aviation enthusiasts and casual observers alike. The student community embraced it enthusiastically, showcasing their creativity and keen eye for aerial wonders. This initiative not only fostered excitement but also strengthened our chapter's visibility and connection with the aerospace domain. **MACHSHOT**



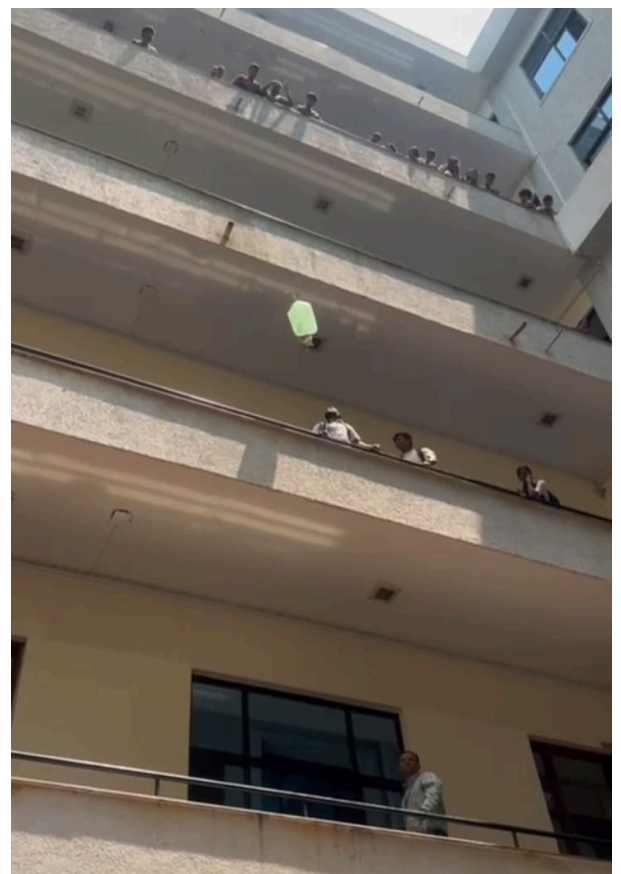
On March 21, 2025, BMSIT&M hosted the International Conference on Computing for Sustainability and Intelligent Future (Comp-SIF 2025). This prestigious gathering of global researchers and industry experts focused on leveraging advanced computing for sustainable development. To complement the high-level technical discourse, the IEEE AEISS student chapter established a prominent exhibition stall. We showcased a sophisticated fixed-wing model and a CubeSat prototype, effectively demonstrating our ongoing technical projects to international delegates. This presence not only highlighted our chapter's engineering capabilities but also served as a primary recruitment hub for prospective members interested in satellite and drone technology. **OPEN DAY 2025**



This aerodynamics-focused competition challenged participants to apply principles of lift and drag through the creation of hand-crafted gliders and paper planes. The objective was straightforward yet technically demanding: achieve the longest sustained flight distance. Students experimented with wing shapes and weight distribution, turning the stall area into a dynamic testing ground. By gamifying the basics of flight mechanics, the event successfully engaged attendees in an accessible exploration of aeronautical design. **GLIDE OR DIE**

The "Eggstronaut" challenge tasked participants with the critical mission of designing a recovery system to safely land a fragile egg payload. Utilizing parachutes and impact-absorption structures, teams had to maximize airtime while ensuring the "astronaut" remained intact upon landing. This event mirrored real-world aerospace challenges in descent and landing systems (EDL), teaching participants about terminal velocity and structural integrity under pressure in a fun, high-stakes environment. **EGGSTRONAUT**

Bringing high-energy propulsion to the conference, the "Splash Rocket" event focused on water-powered rocketry. Participants engineered rockets using pressurized water and air, competing for the highest total airtime. This activity served as a practical demonstration of Newton's Third Law and pressurized thrust. These combined activities successfully boosted the chapter's visibility, providing a creative, low-stress outlet for conference attendees while sparking deep interest in our aerospace initiatives. **SPLASH ROCKET**

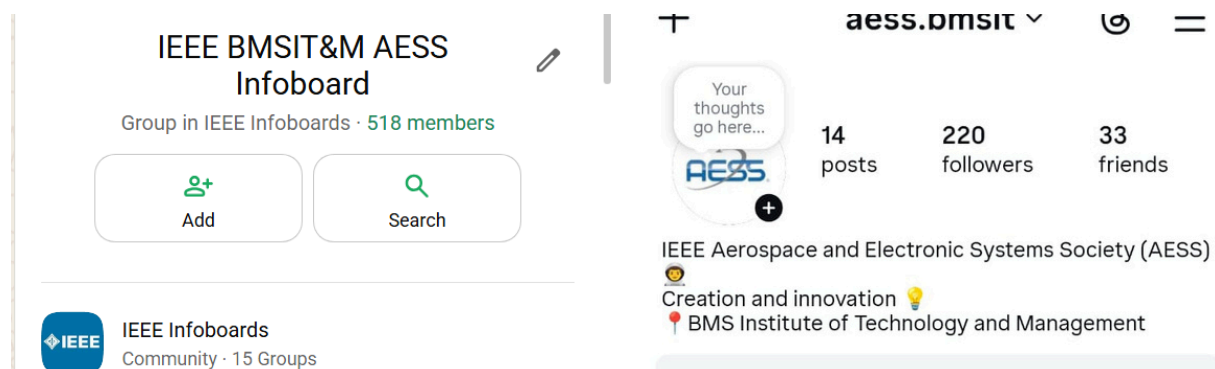


The chapter plays a pivotal role in the **PravahX Student Satellite Program**, driving the institution's long-term mission to design and deploy a functional satellite. This initiative promotes rigorous, interdisciplinary collaboration, allowing students to engage deeply with complex space-system architecture, orbital mechanics, and hardware-software integration. By contributing to **PravahX**, members gain authentic experience in the lifecycle of satellite development, moving beyond theoretical study to solve real-world aerospace challenges. This program stands as a cornerstone of the chapter's technical activities, ensuring a sustainable pipeline of expertise in satellite engineering and preparing the next generation of space leaders.

STUDENT SATELLITE DEVELOPMENT: PravahX



The IEEE AESS BMSIT&M chapter has successfully built a robust digital ecosystem, maintaining an active social media presence that connects with a community of over 500 students. This platform serves as a vital communication bridge, facilitating the regular dissemination of aerospace-focused technical content, real-time event updates, and industry awareness posts. By leveraging digital engagement, the chapter has significantly amplified its visibility across the university and beyond, fostering a digitally-connected network of aspiring aerospace professionals. This strategic outreach ensures that the chapter's initiatives reach a broad audience, consistently driving engagement and interest in cutting-edge space technologies. **DIGITAL OUTREACH**



On August 23, 2025, the IEEE AESS and NCC units of BMSIT collaboratively hosted National Space Day, featuring an insightful keynote by Mr. G. Chandrashekar, Head of P&GA at ISRO. He chronicled India's ascent from its humble beginnings to becoming a global leader through landmark missions like Chandrayaan and Aditya-L1. The session specifically targeted young engineers, highlighting opportunities in satellite technology, robotics, and ISRO's evolving ecosystem. Complemented by the "Chairs Address," which unveiled a future roadmap including the Bharatiya Antariksh Station and Chandrayaan-4, the event successfully ignited curiosity and ambition, bridging ancient wisdom with the infinite possibilities of India's burgeoning space era. **SPACE DAY CELEBRATION**



The IEEE AEES BMSIT&M club organized an impactful technical visit to the Laboratory for Electro-Optics Systems (LEOS, ISRO) to bridge the gap between academic theory and professional space research. Members explored state-of-the-art facilities, including vibration testing areas and specialized laboratories for solar and star sensors—critical components for satellite Attitude Determination and Control Systems (ADCS). Engaging directly with ISRO researchers, students gained firsthand insights into satellite fabrication, precision experimental design, and systematic problem-solving. This exposure has already sparked new project ideas among junior members, fostering increased enthusiasm for aerospace engineering and providing a clear vision of professional R&D careers in India's space sector. **LEOS VISIT**



The IEEE AEES Student & Young Professionals (SYP) Congress 2025, held in Nairobi, Kenya, from August 13th to 16th, served as a global hub for innovation in aerospace systems, CubeSats, and AI-driven avionics. Representing the IEEE Bangalore Section and BMSIT&M, Mr. Akash J P (Chair) and Mr. Parjanya R K (Vice-chair) attended as distinguished delegates and AEES SYP Ambassadors. Selected from a highly competitive international pool, both students were awarded the prestigious \$800 USD AEES Travel Grant. Their participation facilitated high-level networking with industry experts, showcasing BMSIT&M's growing global footprint in electronic systems engineering and fostering international collaboration in cutting-edge aerospace research. **INTERNATIONAL REPRESENTATION**



In the 2025 term, the IEEE AESS BMSIT&M student chapter spearheaded the "Winter of Projects" initiative, focusing on foundational concepts in Electronic Warfare and RF systems through two specialized technical tracks. Participants tackled "The Fox Hunt," a UAV-based signal tracking project utilizing RSSI-based localization, and "Ghost Wave," a controlled demonstration of signal spoofing designed to teach spectrum awareness and ethics. This project-based learning framework culminated in a competitive one-day exhibition where teams presented functional prototypes to faculty. Out of twelve participating societies, an AESS team secured third place, highlighting the high technical caliber and practical relevance of their drone-based reconnaissance and RF sensing solutions. **WINTER OF PROJECT 2025**

