Valentina Senapati **500110677**
Aerospace Engineering **UG Third Year**
University of Petroleum and Energy Studies **Female**
Specialization: Space Technology **DOB: 14.02.2005**

Examination	University	Institute	Year	CGPA/%
B.Tech in Aerospace Engineering	UPES	University of Petroleum and Energy Studies	2022-26	9.4(*till 4th Sem)
BS in Data science and applications	IIT Madras	Indian Institute of Technology Madras	2023-27	8.2(diploma)
Intermediate +2	CBSE	Kendriya Vidyalaya I.T.B.P	2022	94.4%
High School	CBSE	Kendriya Vidyalaya I.T.B.P	2020	97.8%

SCHOLASTIC ACHIEVEMENTS

- Awarded scholarships by the UPES for outstanding academic excellence.
- Secured a cash prize for ranking in the top 1.5% of students in the Class 10 CBSE Board Examinations.
- Achieved 1st position in the Satellite Design Competition organized by Brahmand Exploration
- Advanced to the finale of Visai 2023, an international project competition and exhibition, for developing a solar-powered drone equipped with a thermal imaging camera for pest detection.

TECHNICAL SKILLS

- **Software**: Fusion 360, MATLAB, Ansys, COMSOL, CATIA, XFLR
- **Programming**: Python, C++, SQL, JAVA, HTML, CSS
- **Design and visualization**: Canva, Adobe illustrator
- **Other Tools**: Shapr3D, Arduino, GMAT, Micromoulding

INTERNSHIP AND TRAINING

Astha Rural & Craft Development Society (Social Intern) **[**Jun'23-Jul'23]
Dedicated efforts towards empowering women and children through skill-building initiatives and community development programs.

PROJECTS

Microfabrication, micro-molding of sensor prototypes and flow characterization **[**Aug'24 – Present]

- Utilizing COMSOL for CFD simulations to optimize fluid flow and pressure distribution through microchannels, conducting experimental validation with various fluids and enhancing sensor functionality for real time fluid monitoring and precision control in aerospace microfluidic systems.

Comparative Analysis of Diamond-Shaped and Bi-Convex Airfoils in Supersonic Flow **[**Aug'24 – Dec'24]

- Performed a comprehensive study on diamond-shaped and bi-convex airfoils under supersonic conditions, evaluating their aerodynamic efficiency and performance in high-speed flow.

Terraforming the Red Planet: Navigating Controlled Greenhouse Gas Emission [Feb'24-Oct'24]

- Presented research paper at the International Astronautical Congress (IAC) 2024 for Martian terraformation, utilizing the Mackey Davis equation and solar light focusing with segmented mirrors and CFCs for a habitable atmosphere.

Numerical Analysis of Ground Effect Interaction for Rotational Systems [Feb'24-Oct'24]

- Presented research at the IAC 2024, focusing on the impact of ground effects on rotational systems in Mars' thin atmosphere, with a focus on aerodynamics and system stability.

Predicting and Mitigating Crystallographic Defects in Carbon Nanotubes [Feb'24-Oct'24]

- Investigated methods to predict and mitigate crystallographic defects in carbon nanotubes, aimed at enhancing their structural integrity for advanced material applications.

Dynamic Wing Control Systems for Enhanced Aerodynamics [Jan'24 – April'24]

- Designed a morphing wing structure using CAD and conducted ANSYS simulations to improve aerodynamic performance, achieving a 15% increase in efficiency.

Smoke Detection System [Aug'23 – Dec'23]

- Developed an Arduino-based smoke detection system with integrated real-time monitoring and alert capabilities, significantly enhancing response times and safety protocols.

VT All-Rounder RC Aircraft [Aug'23 – Nov'23]

- Designed and manufactured a remote-controlled aircraft, utilizing XFLR for aerodynamic analysis and incorporating 3D-printed airfoils for improved flight performance.

Numerical Study of Flow Around Torpedoes [Aug'23 – Dec'23]

- Conducted computational simulations using ANSYS software to analyze the hydrodynamic behavior of torpedoes, contributing valuable insights into their design optimization.

Enhancing Environmental Sustainability through Supercritical CO_2 Brayton Cycles [Jan'23 – March'23]

- Presented a poster at an international conference HSEFA, focusing on sustainable aerospace engineering innovations, including supercritical CO_2 Brayton cycle applications and solar-powered drone technology for agriculture.

CO-CURRICULAR ACTIVITIES

AVASYA - Research Team [Sept'24 - Present]

- Investigating electrodeless plasma thrusters to minimize wear and enhance longevity in space propulsion systems.
- Simulating dual-mode propulsion systems for deep-space exploration using MATLAB, ANSYS, and COMSOL.

Ramanujan Society of Research (RaSoR) [Sept'23 - Present]

- Optimizing ion propulsion systems for long-duration space missions to enhance thrust efficiency
- Investigating hybrid ion propulsion with magnetic nozzles to improve system performance.

Team Odyssey – Team Lead [May'24 – Present]

- Lead research preparation for submission to the International Space Challenge organized by Singapore space and technology Ltd.
- Conducted research on space mining and rover launch optimization using CAD, GMAT, and COMSOL.

Infinity Space Club – Editorial Head [May'24 – Present]

- Managed a team to produce editorial content for the club.
- Previously served as the Design, Publicity, and Editorial Coordinator, where I led content creation, designed promotional materials, and coordinated events, earning the "Cosmonaut of the Month" award for leadership and contributions.

Team Agastya - Associate [Nov'22 - Jul'23]

- Designed and manufactured aerospace components, assembled electronic systems, and performed aerodynamic testing