SHATAYU AVINASH MEHTA

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EDUCATION

University of Minnesota Twin Cities   Sept. 2024 –present
Masters of Science, Robotics
- **Coursework**: Machine Learning, Robot Vision and Feedback Control Systems

KJ Somaiya College of Engineering,Mumbai   July. 2018 –June. 2022
Bachelors of Technology, Mechanical Engineering   *GPA– 8.64/10*

SKILLS

Domain Expertise:CNC milling, Laser Cutting, 3D Printing, Computer-Aided Engineering, Fundamentals of Design, FEA
Programming: Python, C++, Android Studio
Hardware Platforms:Arduino, Raspberry PI, Ardupilot
Software:Solidworks, FUSION 360, CREO, ANSYS fluent& Workbench, CURA, PrusaSlicer, chitubox, XFLR5, E-Calc, AutoCAD, MATLAB

EXPERIENCE

RESEARCH AND DEVELOPMENT ENGINEER   Nov 2022 – Nov 2023
Indrones Solutions PVT LTD.   *Mumbai, INDIA*
- **Spearheaded the FUJIN VTOL project** from **inception to completion of the design** and **testing** of the second prototype.
- **Established a streamlined process for the efficient manufacturing** of the VTOL aircraft **reducing the time** from prototype design to completion **by 1.5 Weeks**.
- **Engineered a prototyping solution** for EPP foam machining, **reducing manufacturing costs by 10%** and increasing prototype body durability, enabling **5 additional test flights**.
- **Conducted market analysis** for UAVs, influencing aircraft parameters, target customer identification, and market differentiation strategies.
- Achieved optimized aerodynamic calculations, improving the coefficient of lift from MVP stage to near-prototype values, **reaching 0.428 for enhanced aircraft performance**.
- Designed prototypes using **SOLIDWORKS, AUTODESK FUSION 360** and collaborated with the manufacturing team also **providing training on 3D printing** using **CURA** and **CHITU BOX**.
- **Evaluated and tested powerhouse options** using ECALC for both VTOL and UAVs achieving a **Time-of-flight increase by 25%** for FUJIN VTOL , also established parameters for the aircraft prior to testing.
- Conducted aircraft testing and refined aerodynamics, and design based on results using XFLR5 and ANSYS fluent and analyzed flight data to document the design improvements.
- **Documented the development** of FUJIN VTOL and contributed to technical certification documentation for the S25 UAV.
- Created and tested components for the S25 and S75 UAVs, improving mechanical performance, including the development of a **hot-swappable payload mechanism** for the S75.

DESIGN TEAM LEAD   May 2019 – August 2019
Team Onyx India   *Mumbai, India*
- Fronted the design team for **TEAM ONYX INDIA** in SAE Aero Design 2021.
- Fostered and advised the design team during **SAE Aero design 2022.**
- Led key aircraft design decisions, material selection, and frame manufacturing for the regular class aircraft in SAE Aero Design East.
- **Developed a self-gliding aircraft with a wingspan of 30cm** that automatically landed after being dropped from the mothership, utilizing a flight controller for autonomous landing.
- **Conducted market research** and testing to identify flexible, durable, and **cost-efficient alternatives** to Aero ply, **reducing material costs by 45%**.
- Designed and implemented a torsion box to prevent tail torsion issues caused by the fuselage's rectangular cross-section, improving aircraft stability.
- Engineered a tension spring-based nose landing gear attached to a fork mechanism for enhanced weight distribution and landing efficiency.
- Developed the vertical tail base to effectively mount the vertical tail, optimizing aerodynamic performance.
- **Designed and 3D-printed joints** for the carbon fiber chassis, **improving structural integrity and cost-efficiency for multiple prototyping iterations.**
- **Analyzed and tested four aircraft prototypes** through test flights to determine maximum takeoff weight and structural limits, **ensuring compliance with performance standards**.

ACADEMIC PROJECTS

Design and prototyping of a fruit/vegetable plucking Robot   April 2022
- Implemented **computer vision algorithms** using **RGB color segmentation** using **MATLAB**.
- Calculated **coordinates for bounding boxes** around detected strawberries and transmitted them to an Arduino Uno via **Bluetooth**.
- **Programmed an Arduino Uno** to control stepper motors, actuating the robot's frame based on a **3D printer-inspired mechanism** (timing belt for x/y-axes, lead screw for the z-axis).
- Engineered and controlled a **scissor-inspired gripper mechanism**, powered by a servo motor, to cut the stems of the strawberries.