

**Shoubhit Vinodkumar**  
shobivk.13@gmail.com – 972-215-8432

---

**EDUCATION**

**Texas A&M University | College Station, TX**

*August 2022- December 2026*

*Bachelor of Sciences in Aerospace Engineering with a Minor in Mathematics*

Overall GPA: 3.63

---

**SKILLS**

**Technical:** Aerodynamic Design, Stability & Control, CFD, Wind Tunnel Testing, Control Algorithm Design, Finite Element Analysis, System Engineering, 3D Printing

**Tools:** Python, SolidWorks, MATLAB, Simulink, XFLR5, Ansys Fluent, ROS2, Ubuntu, Linux, Gazebo, Abaqus, Ardupilot Mission Planner, NI Multisim, Microsoft Office Suite

---

**RESEARCH EXPERIENCE**

**EVAIR – AI Autonomous Research Team, Controls/Path Planning Engineer | College Station, TX**

*October 2025 – Present*

- Engineered and tuned PID control algorithms in Python, deploying them via ROS2 on a rover platform to achieve stable autonomous navigation with  $\pm 2$  cm path-following accuracy.
- Collaborated on the design of a fully autonomous drone system, integrating AI-driven path planning and multi-sensor fusion to enhance environmental awareness and obstacle avoidance.
- Simulated and validated path planning algorithms in Gazebo, achieving smooth rover trajectory control and reducing path deviation errors

**Advanced Vertical Flight Laboratory, Undergraduate Researcher | College Station, TX**

*May 2025 – August 2025*

- Designed a 3D aerodynamic model of a quadcopter-biplane-tailsitter UAV in SolidWorks and fabricated the prototype via 3D printing for subsonic wind tunnel testing
- Conducted iterative aerodynamic performance testing to evaluate lift, drag, and moment coefficients across multiple angles of attack, simulating VTOL, transition, and fixed-wing flight regimes
- Processed wind tunnel data in MATLAB to derive aerodynamic coefficients and guide successive airframe design iterations, improving prediction–test correlation accuracy by 12%.

---

**PROJECTS**

**Senior Capstone Design Project – Responsive Firefighting Aircraft, Team Project**

*Aug 2025 – Present*

- Leading aerodynamic and stability & control analysis in XFLR5 to optimize flight responsiveness and achieve a 15% improvement in overall static stability.
- Collaborated with a 8-member design team to optimize payload-to-range ratio and maneuverability for rapid wildfire response
- Applied systems engineering principles to define mission needs, requirements, and risks; conducted cost–benefit and failure-mode analyses to inform design trade-offs.

**Finite Element Analysis of a Vertical Stabilizer, Team Project**

*October – December 2025*

- Modeled and analyzed a Boeing 737 vertical stabilizer in Abaqus under crosswind landing loads, identifying stress concentrations and validating structural factors of safety of 1.5.
- Generated and compared contour plots for stress, strain, and displacement across varied mesh densities and composite materials to optimize structural weight and accuracy.

**Airfoil Computational Fluid Dynamics (CFD) Analysis, Individual Project**

*December 2024*

- Conducted aerodynamic performance analysis of airfoil geometries using ANSYS Fluent, achieving a 12% improvement in lift-to-drag ratio under simulated flight conditions.
- Analyzed flow phenomena with control surfaces and experimented with various control surface dimensions, achieving optimal designs that increased aerodynamic efficiency by 10%.

---

**EXTRACURRICULAR EXPERIENCE**

**Texas A&M University Vertical Flight Design Team, Controls and Avionics Engineer**

*April 2024 – Present*

- Developed and tuned PID control algorithms in ROS2 to stabilize autonomous VTOL flight, improving altitude response time by 20%.
- Led 3D modeling of avionics enclosures in SolidWorks, increasing modularity through improved component integration.
- Supported integrated flight testing and ground validation, identifying control instabilities and refining autopilot parameters to achieve competition-level readiness.

---

**WORK EXPERIENCE**

**Luna Vista Golf Course, Outside Services | Dallas, TX**

*March 2022 – August 2022*

- Streamlined daily operations by managing around 250 customer check-ins and tee times while supporting seamless course management.
- Maintained golf carts to operational standards and contributed to a positive customer experience and consistent course quality.

---

**RELEVANT COURSEWORK**

Aerospace Design Principles, Orbital Mechanics, Active Controls for Aerospace Vehicles, Aerothermodynamics and Propulsion, Principles of Electrical Engineering, Aerospace Structural Analysis II, Dynamics of Aerospace Vehicles