YASHWANTH M

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Education

Indian Institute of Technology Hyderabad | 9.57 CGPA **June 2024**
Master of Technology in Thermo-Fluid Engineering *Hyderabad, Telangana*
- Key courses: Computational Fluid Dynamics, Turbulence, Probability Theory, Machine Learning, State Estimation

Visvesvaraya Technological University | 7.75 CGPA **August 2020**
Bachelor of Engineering in Mechanical Engineering *Bengaluru, Karnataka*
- Key courses: Mechanics of solids and fluids, Control Systems

Research Contributions

Conference Presentation:
Balachandar, Neeraj, **Yashwanth M**, Akash M, Mahathi Kesavan, and Vishnu Rajasekharan Unni. "Actuator System for Directional Manoeuvre of a Flapping Wing Aerial Vehicle." AIAA SCITECH 2025 Forum. 2025.

Patent:
Yashwanth M, Harishankar M, Vishnu R. Unni, Nithyanandan Kanagaraj. "A system and a method for controlling state of array of coherent sources of electromagnetic waves field of the invention". Filed on **23rd May 2024**. Patent pending.

Positions of Responsibility

Swarm rescue challenge (CIEDS - DRDO) **November 2024 – Present**
Evaluator | *Swarm Rescue Website* *Bengaluru, Karnataka*
- Evaluating **drone control algorithms** from the Indian teams, assessing performance in three evaluation phases
- Mentoring **10 teams**, driving regular progress reviews to ensure timely progress in competition milestones
- Collaborating with **international evaluators** to improve automation and streamline the evaluation process

Complexity and Nonlinear Dynamics in STEM (CNLDS) Conference: **June 2023**
Student Volunteer *IIT-Hyderabad, Telangana*
- Managed event registration for **150+ participants**, efficiently handling inquiries and ensuring check-in time is reduced from **15 to 5 minutes per person**
- Coordinated with event heads to deliver seamless execution of a **three-day conference**, managing **25+ sessions** and contributing to its overall success

Projects

State estimation for a nonlinear mechanical system | *SymPy, Lagrangian method* **November 2024**
- Derived a linear model governing a cart with a double pendulum system using Python's library (**SymPy**)
- Implemented advanced estimator algorithms such as **RLS**, **Linear Kalman Filter**, and **Particle Filter** in python
- Conducted a comparative analysis of these algorithms, evaluating their performance in estimating **unmeasured states** and identifying key trad-offs in accuracy and computational cost for sensor-noise levels close to **10 SNR**
- Link: *State-estimation-Algorithms.git*

Development of novel flow control facility for DRDO | ***System design***, *Tkinter, Arduino* **April 2024**
- Secured **research grant** for this project from DRDO Industry Academia Center of Excellence (**DIA-CoE**)
- Engineered a system of 16 BLDC motors with independent control, validating **proof-of-concept** requirements
- Developed a **scalable GUI** using Python's **Tkinter** library, improving facility control speed by **95%**
- Link: *VAYU-Control-GUI.git*

Simulation of Rayleigh–Bénard Convection | *Matlab,* ***Git****, LaTex* **March 2023**
- Developed a **CFD solver** to investigate complex flow patterns induced by **gravity-buoyancy instabilities** in air. Achieved over **93% accuracy** in correlating with benchmark simulations
- Link: *Rayleigh-Benard-Convection.git*

Modeling transient heat transfer and flow start problems | *Python,* ***Google Colab*** **November 2022**
- Derived **analytical solutions** for Bessel functions in two applications and demonstrated results through simulation
- Link: *Bessel-Function.git*

Technical Skills

Scientific Computing: Python (Control, Tensorflow, NumPy, Scikit-learn, Pandas, SymPy, Tkinter), C/C++, SQL
Commercial tools: Matlab, ANSYS-Fluent, Autodesk-Fusion 360, Solid-Works, Arduino IDE
Technologies/Frameworks: Linux OS, VS Code, GitHub, LaTex, VI editor