Rohit Gupta

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LinkedIn | Website | London, UK | Work Location: Anywhere across U.K.| Nationality: Indian

Summary: A Multi-skilled engineer with 2+ years of work experience and **Dual International Master's** in engineering focusing towards AI and Autonomous systems

Technical Skills (Proof of works)

- **Programming**: Python, Matlab & Simulink, Git
- **Control systems**: MPC, PID, LQR,MRAC, Self-Tunning, Fault detection, diagnosis & isolation
- **Robotics**: Perception, Navigation,Path planning
- **Computer Vision**: OpenCV, YOLO, Tracking, Segmentation, Vision transformers
- **Sensor Fusion**: EKF, IMM, Adaptive Filtering
- **Machine Learning**: Pytorch, Huggingface, AI Agents, LLM, Streamlit, FastAPI
- **Cloud & ops**: Git, AWS, Docker, Google colab, Vercel, VMware
- **Tools**: Solidworks, Ansys, Blender, Tableau, Siemens Tia Portal, HMI design

Education

- **Master Of Science Automation, Control and Robotics |** Sheffield**, UK** Jan-23 – **June-2024**
  *Sheffield Hallam University (*Key modules: - Artificial Intelligence, Advance Control, Systems on Chip, Robotics and Machine Vision)
  Thesis: Multi-Sensor Data Fusion using Adaptive filtering **(IMM)** for Autonomous surface vehicle Navigation
  - Implemented Interactive multiple model algorithm on IMU, GPS data vs groudtruth data of ASV, by incorporating multiple dynamic models like constant Velocity, constant Turn rates & CV high
  - Benchmarked and compared IMM algorithm's performance against other state-of-the-art multi-sensor fusion algorithms, such as the Extended Kalman Filter (EKF), (UKF) for ASV navigation.
- **Master of Engineering Aerospace and Astronautical Engineering |** Forli, **Italy** Nov-16 – Oct-2019
  University of Bologna
- Bachelor of Technology in Aeronautical Engineering | Hyderabad, **India** Sep-11 – June-2015

Projects (Link)

- **Model Predictive controller** based Autonomous car parking and car obstacle avoidance in python
  - Carefully tunned cost function to balance various control objectives, including accurate positioning, orientation, smooth control inputs and obstacle avoidance during simulations
  - Illustrated how MPC handles intricate scenarios like obstacle avoidance, precise & adaptive maneuvers
- Simulated behaviour of Autonomous car state estimation and tracking using 1D Kalman Filter and **2D Kalman Filter** for Traffic Light Prediction
- Implementation **of Fault Detection**, Diagnosis & **Isolation** on a system plant using Simulink
  - Model based and structural residual based FDI techniques were implemented on a discrete state space plant, simulations were performed to detect different faults in sensor data
- Processing and Analyzing an Image, **Real-Time Tracking** of different Shapes, Color
- Developed a **Streamlit web app** utilizing **YOLOv8** and **YOLOv10** models for semantic segmentation
- Altitude **Airspeed Autopilot** for Piper PA30 Aircraft and Stability Augmentation Systems
- **Multi-Class Classification** on Cleveland Heart disease dataset to predict severity of heart disease

Professional Experiences

- **Freelance** | Consultant for EVTOL startup & Additive manufacturing Engineer May- 21- Feb-22
- **CAE Engineer Intern** | Simulation Lab Apr - 20- Jun-20
- **CFD/FEA Trainee** | Simscale | CFD & FEA Projects and workshops Apr -18- Oct-18
- **Student Intern** | University of Bologna - Hangar Laboratory, Forli Airport Mar-18- May-18
- **English Instructor** at Language Center | UNIBO CLA, Forli, Italy Jan- 18- Mar-18
- **Associate Account Receivable** | IKS Technologies, Hyderabad, India Sep-15- Sep-16
- **Student Trainee** | Bharath Dynamics Limited, Hyderabad India July-14- Aug-14