RAMONA DEVI

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Experience

Archer Aviation   October 2023- Present
GNC Engineer   *San Jose, CA*

- Responsible for the design and testing of a full-scale Vertical Takeoff and Landing (VTOL) Vehicle. .

Space technology and Aeronautical Rocketry   June 2023- July 2023
System Engineer Intern   *Remote, CA*

- Designed a Static test pad for rocket motors for testing and acquiring the data for performance analysis of the high-powered rocket motors

Control Systems Lab, The Pennsylvania State University   Jan 2021- Present
Graduate Research Assistant   *State College, PA*

- Developed and incorporated a PID control system to manage the rocket's pitch angle during the landing phase, ensuring a precise vertical touchdown. Ran the full flight simulation in Flightgear, ensuring the proper sequencing of events, trajectory tracking, and the successful execution of gravity turn, boostback, and vertical touchdown.
- Designing a Model Reference **Adaptive Control System** for regulating the speed of main hoist of Grove rough-terrain crane. A Hardware-in-the-loop simulator is realized on an FPGA based embedded platform.

Space Systems Lab   July 2019 – Dec 2020
Research Assistant   *IIIT Delhi, India*

- Designed an autopilot for the ascent phase of the Space Transportation System (STS) launch vehicle using an LQR-based control system
- Implemented a PID controller using MATLAB and Simulink for satellite attitude control. Applied root locus and bode plot analysis techniques to design and optimize the control system using MATLAB, focusing on stability, tracking accuracy, and robustness.
- Designed a remotely accessible swarm robotics testbed capable of implementing centralized and decentralized algorithms. Implemented perception-driven distributed control on multiple robots.
- Developed a comprehensive GNC system architecture for a rocket/missile, integrated LQG and Kalman Filtering Algorithms to optimize performance and stability during flight.
- Formulated a sophisticated simulation model using MATLAB and Simulink to study the behavior of a missile targeting system. The model integrated Proportional Navigation Guidance for accurate target interception and a 3-loop autopilot system for pitch attitude control to ensure stability during flight.

Vedanta Resources Ltd   July 2018 – Jun 2019
Control Systems Engineer   *Punjab, India*

- Developed and implemented an advanced control system for a turbine-generator unit of the power plant. Integrated fault detection and diagnosis algorithms into the control system to identify and respond to potential issues in real time.

Projects

Autonomous Flight Control for Vertical Takeoff and Landing (VTOL) drones | *Python, Unity*   Jan 2022

- Designed and implemented advanced control algorithm like model predictive control (MPC) and adaptive control system for a flying car prototype. Design process encompasses various aspects, including flight dynamics, propulsion, stability, and navigation.

Technical Skills

Languages: MATLAB, Python, Simulink, C++, Embedded C, Ladder, LaTex, Git
Software: Flightgear, CAM, AutoCAD, ROS, LabVIEW, CoppeliaSim, National Instruments, Ardupilot, Mavlink, Mission Planner, PLC/SCADA, Gazebo, CARLA, Microsoft Excel, SAP

Education

The Pennsylvania State University, University Park   Jan. 2021 – May 2022
Masters of Science in Electrical Engineering   *GPA - 3.84*

NIT Jalandhar, India   July 2014 – May 2018
Bachelor of Engineering in Instrumentation and Control Engineering   *GPA- 8.23*

Relevant Coursework: Masters | *Dynamics and Control of Aircraft, Automatic Control Systems, Spacecraft Dynamics and Control, Spacecraft control and Dynamics, Robotics, Adaptive Control Systems, Nonlinear Control, Optimal State Estimation, Reinforcement learning*