

Anirudh Upadhyaya

Linkedin: <https://www.linkedin.com/in/anirudhupadhyaya>

Github: <https://github.com/anirudhupadhyaya>

Email : aupadhyaya4@wisc.edu

Mobile : +1-309-703-7591

EDUCATION

- University of Wisconsin-Madison** Madison, WI
Masters in Electrical and Computer Engineering; GPA: 3.88 Sep 2022 - June 2024 (Expected)
Courses: Electromagnetic design of AC machines, Dynamics of AC Machines and Drives, Power Electronic Circuits, Digital System Design
- Indian Institute of Technology Madras** Chennai, India
B.Tech in Automotive Engineering GPA: 3.45 (8.61/10.0 - Top 10 in class of 55) Aug 2013 - May 2018
Courses: Control of Automotive Systems, Analog and Digital Electronics, Energy Storage Devices and Systems

OBJECTIVE

Experienced electrical engineer with expertise in motor controls and 4 years of work experience in the automotive industry seeking full time position for power engineering roles.

SKILLS SUMMARY

- Languages:** C++, Python, C, R
- Tools:** MATLAB, GIT, ETAS INCA, Vector CANalyzer, L^AT_EX, JMAG, FEMM
- Protocols:** CAN, SPI, UART, I2C

EXPERIENCE

- Seveson Research Group** Madison, WI
Research Assistant, Advisor: Eric Severson Sep 2022 - Current
 - Member:** WEMPEC - Wisconsin Electric Machine and Power Electronics Consortium
 - Characterization of bearingless machine on bearingless dynamometer:** Conducted experiments, developed scripts to automate and post-process data, and performed engineering analysis to characterize and measure machine constants
 - Operation of ultra-high speed machines:** Successfully operated and tested a bearingless machine at 60 kRPM. Techniques understood and implemented: *Continuous and discrete-time control, field oriented current regulation, motion control for rotation and levitation*. Responsible for realizing entire test setup and necessary firmware.
 - Control simulation and verification through MATLAB Simulink:** Developed simulink models to perform Model-in-loop (MIL) simulations, developed custom C code to integrate and test auto-generate embedded C code on custom control board - AMDC
 - Sensorless operation for high-speed machines:** Developed a novel observer based technique to accurately sense rotor positions at speeds in excess of 100 kRPM. Resulted in a conference paper.
- Bosch Limited** Bangalore, India
Deputy Manager - R&D July 2018 - July 2022
 - Li-ion Battery Development:** Responsible for system requirements elicitation, system requirements definition, functional integration and functional testing of lithium ion battery pack for two-wheeler application. Defined functional requirements for Battery Management System (BMS) and lead interaction with potential suppliers of BMS
 - Electric Vehicle Application Engineering:** Studied the interaction of powertrain components of a 1.5-ton electric light commercial vehicle to calibrate the Vehicle Control Unit (VCU) software. Defined test cases and executed on-road fleet validation programme to improve calibration maturity. Analysed fleet data and set up bug tracking mechanism.
 - Battery Management System (BMS) Development:** Performed component selection including the Analog Front End (AFE), MOSFET and Gate driver IC for a 4 cell Lithium-ion BMS. Contributed to schematic review of the BMS. Developed firmware in embedded C for an ARM based microcontroller to test basic functionality of the BMS

PUBLICATIONS

- Anirudh Upadhyaya**, Aravind M. Nair, Nathan Petersen, Eric Severson "Back-EMF Based Self-Sensing Vector Control for Ultra-High-Speed Surface Mount PMSM" *2023 IEEE Energy Conversion Congress and Exposition (ECCE)*, Nashville, TN, USA, 2023 (Accepted)
- Yettella Siva Prasad Reddy, **Anirudh Upadhyaya**, Vittilapuram Kannan Subramanian "A metric based battery thermal design approach" *2021 IEEE International Transportation Electrification Conference (ITEC-India)*

SOCIETIES AND ACTIVITIES

- Student member of IEEE Industry Applications Society (IAS) and Industrial Electronics Society (IES)
- Volunteered as a reviewer for multiple conferences - ITEC 2023, ECCE 2023
- Helped organize STEM outreach programs for middle school youth across Wisconsin