

Chinmay Anand Ranade

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Education

MS in Electrical Engineering, San Diego State University, CA

Aug 2023 – May 2025

Coursework: Power Electronics, Adv. Power Electronics, Analog Devices, Signal and Power Integrity.

GPA: 3.58

B.E. in Electronics and Telecommunication, Savitribai Phule Pune University, India

Aug 2019 – May 2023

Coursework: Power Devices and Circuits, Microcontrollers, Control Systems, VLSI System Design.

GPA: 3.62

Technical Skills

Technical Skills: DC-DC/AC-DC converters, Circuit Design, System validation, Renewable Energy, Power Supplies, PCB Design, PCBA

Languages: Python

Design & Simulation Tools: MATLAB(Simulink), Altium, Ansys,PLECS, AutoCAD Electrical, ADS, SolidWorks (Electrical)

Experience

Electrical Engineering Intern, Hyaxiom Inc. (A Doosan Company), Connecticut, USA

Jun 2024 – Aug 2024

- Designed high-voltage pre-charge circuits to prevent inrush currents and enhance system reliability using AutoCAD Electrical
- Performed validation and system-level testing for HV pre-charge circuits and rectifiers, ensuring optimal performance and safety.
- Assembled and tested HV stack voltage measurement devices to ensure precision and safety.
- Collaborated with system engineers to integrate VFDs, and PLC control logic seamlessly, writing FMEA's and DFMEA for field issues.

Teaching Associate and Instructional Student Assistant, San Diego State University

Aug 2023 – current

- Teaching and managing labs on Electricity and Magnetism, covering core concepts like electric/magnetic fields, circuit elements, and Faraday's Law
- Assisting in Mechatronics Engineering Sensor Technology and Control system coursework, projects, grading assignments.

Quality Analysis and Test Intern, Electronet Equipment Private Limited, Pune, India

Jan 2022 – Feb 2022

- Worked on reducing PCB size by 10 % of Ultrasonic level sensors and electromagnetic flow meters.
- Quality engineer resolving circuit-related problems in level sensors and electromagnetic flow meters.
- Tested, debugged, and verified SMPS for efficiency, reliability, and performance, achieving a 20% reduction in energy consumption.

Solar Electric Vehicle, Team Hyperion

July 2021 – May 2023

- Designed HV and LV circuits for EV powertrain, optimizing power delivery and system integration for automotive applications.
- Led solar subsystem development, designing high-voltage (HV) and low-voltage (LV) power systems, solar panels, and MPPT controllers to enhance energy efficiency and performance.
- Implemented I2C and CAN communication protocols for ECU and designed buck-boost and AC-DC converters to enhance power efficiency in compact circuits, showcasing expertise in advanced electronic systems.
- Contributed to autonomous driving projects by assisting in the design of ultrasonic sensor and camera circuits, while managing team resources and serving as treasurer for one academic year.

Projects

Bidirectional DC-DC Converter with GaN/SiC Modeling)

Oct 2024 - Dec 2024

- Designed and simulated a bidirectional buck-boost DC-DC converter in PLECS using GaN/SiC devices for high-efficiency energy transfer in EV and battery systems.
- Implemented closed-loop PI control for seamless charging/discharging mode transitions with PWM and dead-time logic.
- Analyzed switching/conduction losses, thermal behavior, demonstrating performance gains of wide-bandgap semiconductors over silicon.

Design and analysis of Microgrid Integration with EV Charging

Jan 2024 – May 2024

- Designed and simulated a microgrid infrastructure for EV charging in MATLAB Simulink, optimizing converter and inverter efficiency for low-voltage and high-voltage applications.
- Analyzed power flow and load management to ensure stability and efficiency, showcasing advanced knowledge in power electronics and renewable energy integration.

Wireless Charging system for small devices using resonant coupling

Oct 2023 – Dec 2023

- Developed and simulated a wireless charging system for small devices using resonant coupling techniques, leveraging Simulink and Ansys for detailed electromagnetic analysis.
- Focused on maximizing power transfer efficiency and ensuring robust performance under varying operational conditions.

Publications, Certifications & Achievements

- “Human Following Luggage Carrying Robot” - 10.48175/IJARSCT-10923
- Certifications:** EV Motor & battery sizing calculation in Excel, BMS Demonstration, BMS - Hardware Overview (DECIBLEs LAB)
- Led the team as Electrical Subsystem Head and achieved AIR 2 and AIR 4 rank in ESVC and SUVC, respectively.