Ishaan V. Shetye

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Summary: Graduate student in Electrical Engineering (Power and Energy) with 3 years of experience in Power Systems design. Interested in design, control and modeling of Power Electronics

Education

B.S. in Electrical Engineering (May 2019)
South Dakota School of Mines and Technology
GPA: **3.89**

M.S. in Electrical Engineering (April 2024)
University of Michigan Ann Arbor
GPA: **3.93**

Work Experience

Grader - EECS Department, University of Michigan Ann Arbor (Sep 2022 – Present)

- Graded assignments and evaluations for EECS 215, a sophomore level circuits class

Electrical Engineering 3 (EDGE Associate)– Black & Veatch Corporation (June 2019 – June 2022)

- Performed engineering calculations such as DC battery and charger sizing, voltage drop, conduit sizing, station service transformer and panelboard sizing, short circuit, lightning protection and more
- Developed basis of design documents, equipment specifications, material lists and created drawings such as one lines, three lines, schematics, wiring diagrams, panel fronts, network diagrams
- Resolved RFIs and identified issues in Power Distribution Systems for Data Centers
- Highlighted opportunities to data center clients for continuous improvement in design and construction of facilities by suggesting innovative technology and optimal process alternatives
- Undertook field surveys to identify faulty surge arrestors and evaluated performance through thermal imaging to recommend replacements

Business Process analyst (EDGE Associate) – Black & Veatch Corporation (May 2020 – Jan 2021)

- Led a Six Sigma project in Green Belt capacity to reduce engineering downtime; realized 3-yr NPV of $3.1M in savings
- Mapped active construction projects and prospects using Power BI to support staffing decisions
- Monitored KPIs and processed market intel to support growth initiatives

Control Systems Co-op – TDK Hutchinson Technology Inc. (Jan 2018 –July 2018)

- Redesigned wiring for a copper plating machine to minimize power losses
- Initiated reconfiguring hardware to transition from GE 90-30 PLC systems to RX-3i PAC system
- Redlined electrical prints to incorporated design changes on Etching and Plating machines

Undergraduate Research Assistant – SDSM&T (Dec 2015-May 2016, Nov 2018 – May 2019)

- Assisted in programming ATmega microcontrollers for UAV control and navigation
- Simulated alarms on Arduino platforms for USAF's 'Smart Shelters' project

Projects

LED Driver Circuit for Warm Crank operation (EECS 498 Design Project) – (Aug-Dec 2022)

- Design a feedforward Zeta Boost converter (6-12V input) cascaded with current-controlled feedback buck converter (1A output)
- Designed the PI control, simulated the schematic in PLECS and created PCB layout in Altium
- Performed testing and debugging to achieve provided specifications
- Achieved overall efficiency of 92.17% and low output ripple

Restoration of vintage Simpson 260 Analog Multimeter - Ongoing

- Tested all passive components and compared to values specified in the datasheet schematic
- Procured original replacement parts and prototyped the circuit on a breadboard; special consideration for cost constraints
- Pending final assembly, testing and calibration

Determining the Feasibility of Energy Arbitrage for Hyperscale Data Center Sites with Co-Located BESS, given Industry-Standard Power Distribution Topologies and SOPs- EECS 534 Major Project

- Objective: Determine the feasibility of energy arbitrage for hyperscale data centers and an estimate of yearly profit potential
- Defined a System for charging and discharging cycles of BESS in data centers
- Calculated battery capacity, Power XFMR and cable specifications for selected ratings (40 MW load, 6h charge time, 4h discharge time)
- Developed models for distribution system lines and transformers
- Determined bus level voltage drops, voltage unbalance and power losses across lines and XFMRs from MATLAB simulations using FBS techniques
- Defined a function for profit calculation to determine breakeven point in 'cents/kWH' and provided an estimate of yearly profit opportunity

Skills:

Circuit Simulation: PLECS, PSPICE, ADS
Project Management: Microsoft Project, Primavera P6, Power BI, Autodesk BIM 360, Procore
Other: Altium, Silvaco Atlas, Synopsys Sentaurus, MATLAB, PowerWorld Simulator, Bluebeam Revu

Courses:

Fall 2022: Power Electronics, Power Semiconductor Devices, Analysis of Distribution Systems & Loads
Winter 2023: Battery Systems and Control, Electric Machinery and Drives, Grid Integration of Renewable Energy Sources, Flat Panel Displays
Prior: Feedback Control Systems (SD Mines), Embedded Systems (SD Mines), Wireless Communications and Network Security (SD Mines)

Honors/ Achievements and Activities

- Tau Beta Pi Michigan Gamma Chapter – Graduate Vice President (WN 2023) and DEI Chair
- Certified Business Excellence Green Belt and Innovation Leader
- Tau Beta Pi National Engineering Scholarship 2018-19
- Ronald J. Schmitz Award for Outstanding Junior in Electrical Engineering
- Young Professionals in Energy KC- Board Member 2022
- Fomento Scholars – Led outreach and created content for marketing efforts to expand donor and recipient bases and to recruit more students from underprivileged communities