

Parikesit Pandu Dewanatha

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Objective

Mechanical engineering graduate specializing in system modeling and controls, seeking a full-time role in Mar 2025.

Education

Purdue University, West Lafayette, IN Jan 2023 – Feb 2025

Master of Science in Mechanical Engineering, 3.91/4.00

Research Concentration: System Modeling and Controls of Thermal Systems

Purdue University, West Lafayette, IN Aug 2018 - Dec 2022

Bachelor of Science in Mechanical Engineering, 3.80/4.00

Minor: Global Engineering Studies

Study Abroad: Global Engineering Alliance for Research and Education (GEARE):

Karlsruhe Institute of Technology, Karlsruhe, Germany Jan 2022 - Aug 2022

Graduate Research

Master's Thesis: Battery Electric Vehicle (BEV) Thermal System Modeling Jan 2024 – Feb 2025

- Developed a novel closed-loop transient simulation tool for BEV thermal management systems (TMS) to optimize design concepts up-front, considering performance, topology and geometric constraints. The tool streamlines early-stage design decisions and ensures optimal system performance.
- Leveraged graph theory to model complex thermodynamic components using physics-based and first principles methods in Python, enabling modular and scalable system analysis.
- Verified and validated reduced-fidelity models against high-fidelity Dymola model at component, cycle and system levels, achieving comparable transient and steady-state responses and ensuring model accuracy.

Closed-loop Analysis of Thermal Energy Storage (TES) Device Arrangement in a TMS Aug 2024 – Dec 2024

- Modeled phase change material (PCM)-based TES arrangements using graph theory in MATLAB. Evaluated their impact on TMS closed-loop response and identified optimal configurations to enhance thermal performance.
- Applied Model Predictive Controller (MPC) to optimize heat dissipation, improving system efficiency across all TES arrangements.
- Presented research at ITHERM 2024 conference; published by IEEE and awarded runner-up for best poster.

Work Experience

ZF Friedrichshafen AG: ADAS Division, Validation and Test Engineer Co-Op Jan 2022 – Apr 2022

- Designed and implemented a Python tool to control the ventilation system of the ZF ProAI supercomputer, featuring an intuitive heads-up display. The tool enhanced efficiency during NVH testing with customers in the automotive industry.
- Automated test result analysis using Python, generating graphical figures, data statistics, and comprehensive reports. The workflow improved reporting speed and accuracy, becoming a standard across the division.

ZF Friedrichshafen AG: CV Division, Systems Engineer Co-Op Jun 2020 - Aug 2021

- Conducted 'End of Line' HIL testing for 50 EPHS steering system prototypes, ensuring readiness for vehicle testing.
- Created a testing protocol to validate EPHS shaft alignment using IQAN Design and will be implemented in future commercial production.
- Validated EPHS thermal and voltage protection mechanism by modeling derating functions in MATLAB and Simulink. Identified safety function discrepancy in prototype, leading to supplier software adjustments.

Undergraduate Research

Drop In Bio-Sensor (DIBS) Undergraduate Research Project, Electronics Lead Aug 2021 – Dec 2021

- Enhanced Arduino-based light sensor for E-Coli detection by optimizing performance under low-light conditions through sensitivity analysis and improved data logging via PCB design updates.

Skills & Expertise

Software: Python, MATLAB, Simulink, Dymola, Arduino, LabView, IQAN, C-Programming, CAD, FEA

Expertise: System Modeling and Controls, Component/System Level Validation, HIL/SIL Testing, System Optimization

Involvements: Purdue Electric Racing – Aerodynamics, Society of Asian Scientists and Engineers – Marketing Chair