# Parikesit Pandu Dewanatha

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## *Objective*

Mechanical engineering graduate specializing in systems modeling and validation, seeking full-time role with immediate availability.

## *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: Karlsruhe Institute of Technology**, Karlsruhe, Germany          **Apr 2022 - Aug 2022**

## *Skills & Expertise*

**Software:** Python, MATLAB, Simulink, Dymola, Arduino, LabView, IQAN, C-Programming, CAD, CFD, FEA
**Expertise:** System Modeling & Controls, Component/System Level Validation, HIL/SIL Testing, System Optimization, Thermodynamics, Automotive, Data Analysis, Public Speaking, Collaborative Work, First-Principles Oriented.

## *System Modeling and Validation Experience*

**ZF Friedrichshafen AG Germany: 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 USA: 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. Devised an automated model and workflow between test bench, IQAN, and Excel for data analysis and automated report generation for commercial vehicle clients.
- 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.
- Ideated and designed a mobile bench test for EPHS software validation testing. Managed the design topology, CAN connections and the electrical wiring diagrams. It became the main test bench for EPHS software releases.

## *Thermal Modeling and Controls Experience*

**Master's Thesis: Battery Electric Vehicle (BEV) Thermal System Modeling**       **Jan 2024 – Feb 2025**
- Developed a novel closed-loop transient physics-based model for BEV thermal management systems (TMS) in Python to optimize design concepts up-front, considering performance, topology and geometric constraints. The tool streamlines early-stage design decisions and ensures optimal system performance.
- Verified and validated reduced-fidelity models against high-fidelity Dymola model at component, cycle, and system levels, achieving comparable transient and steady-state responses, 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.
- Presented research at ITherm 2024 conference; published by IEEE and awarded runner-up for best poster.

## Electronics and Embedded Systems Experience

**Mars Rover Competition, Software Implementation and Testing**  **Jan 2023 – May 2023**
- Implemented state machine and heuristic controls on Arduino to enhance rover autonomy.
- Tested rover performance across object detection, retrieval, and delivery to checkpoint, successfully passing all three performance tests.

**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.
- Improved PCB hardware design to support SD card-based data logging for improved storage.

**Sheepdog Robot Project**  **Aug 2021 – Dec 2021**
- Programmed a PID-based velocity control to ensure consistent rover movement in LabView.
- Coded a state machine to control robot movement based on IR and ultrasonic sensor inputs. Scored 10/10 points during mobility test.

## Organizational Experience

**Global Engineering Alliance for Research and Education (GEARE), Ambassador**  **May 2019 – Dec 2022**
- Studied and worked abroad in Germany, involved in multicultural social and technical activities in the US and Germany.
- One of three chosen ambassadors out of 50+ in the cohort to present and promote the GEARE program to current and prospective industry sponsors.
- Represented GEARE at alumni award ceremonies and representative interviewee for Purdue's promotional video.

**Society of Asian Scientists and Engineers (SASE), Marketing Chair**  **Aug 2019 – May 2020**
- Promoted the club through public speaking in front of 120+ prospective members.
- Designed marketing materials to promote club professional and social events.
- Interacted with student organizations and collaborated on events, including the SASE Midwest Regional Conference.

**Purdue Electric Racing (PER), Aerodynamics Team**  **Aug 2018 – May 2020**
- Led the hot wire foam manufacturing process; Work with fellow peers to set up and clamped Styrofoam blocks, calibrating tool settings, programmed the hot wire tool, and ensured precise cutting of wing profiles.
- Performed fiber glass wing layups by preparing molds, layering the fiber glass material, applying uniform resin application.
- Modeled airfoil iterations in SOLIDWORKS and analyzed aerodynamic performance through ANSYS Fluent.

## Teaching Experience

**ME 354: Machine Design, Graduate Teaching Assistant**  **Jan 2023 – May 2023**

**ENGR 131: Introduction to Engineering, Undergraduate Teaching Assistant**  **Aug 2019 – Dec 2019**

## Publications, Posters, and Presentations

1. P. P. Dewanatha, D. Gulewicz, and N. Jain, "Closed-loop Analysis of Thermal Energy Storage Device Arrangement in a Thermal Management System," in *2024 23rd IEEE Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm)*, May 2024, pp. 1–10. DOI: 10.1109/ITherm55375.2024.10709619.
2. P. P. Dewanatha, N. Jain, "Battery Electric Vehicle Thermal Management System Graph-Based Modeling", Poster, Modeling Estimation and Controls Conference (MECC), Chicago, IL, November 2024.
3. P. P. Dewanatha, N. Jain, "Battery Electric Vehicle Thermal Management System Graph-Based Modeling", Poster, Industrial Advisory Committee (IAC), West Lafayette, IN, October 2024.
4. P. P. Dewanatha, N. Jain, "Electrical Vehicle Thermal System Design Optimization", Presentation, Cooling Technologies Research Center (CTRC) Fall Meeting, West Lafayette, IN, November 2024.
5. P. P. Dewanatha, N. Jain, "Electrical Vehicle Thermal System Design Optimization", Presentation, Cooling Technologies Research Center (CTRC) Spring Meeting, West Lafayette, IN, May 2024.