SHAWN KRISHNAN

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Education

- **Carnegie Mellon University** May 2025
  Master of Science in Artificial Intelligence Engineering — GPA: 3.76/4.00 *Pittsburgh, PA*
- **Carnegie Mellon University** December 2023
  Bachelor of Science in Mechanical Engineering — [Undergraduate Portfolio: http://t.ly/ObQ8V] — GPA: 3.74/4.00 *Pittsburgh, PA*

Relevant Work Experience

- **Mechanical Artificial Intelligence Lab Research Assistant** Aug 2024 – Present
  Carnegie Mellon College of Engineering [Lab Website: https://sites.google.com/view/barati/home] *Pittsburgh, PA*
  - **Research Focus**: Graduate Research under Professor Amir Barati Farimani. Working on partial differential equation optimization (PDE) using Deep Learning, Physics Informed Neural Networks, and other methods to simulate Turbulent Flow
- **AI/NLP Systems Engineering Intern** May 2024 – Aug 2024
  Comtech Telecommunications Inc *Seattle, WA*
  - **AWS-Lambda Functions with NLP**: Developed and implemented AWS Lambda functions that utilize NLP capabilities from AWS Lex to establish call severity and aid 911 operators decision making.
  - **Multi-modal Naive Bayes Classifier**: Integrated a Multi-modal Naive Bayes Classifier into 911 communication APIs, improving call analysis, translation capabilities, and operator response efficiency
  - **Flask API for Data Packaging**: Created a Flask API to package and transfer data from chatbot sessions, including call time, caller information, and caller location to other PSAP systems for further analysis and improved human response.
- **Technical Sales Intern** May 2023 – Aug 2023
  Ingredion Inc *Bridgewater, NJ*
  - **Salesforce Research and Analysis**: Conducted comprehensive research and analysis in Salesforce to identify growth opportunities and potential revenue increases based on competitors' performance—identified an additional 38% of potential sales volume for Ingredion.
  - **Market Communication**: Delivered high-impact presentations and reports to communicate market opportunities to executives and sales account managers effectively.
  - **Client Relations**: Participated in sales calls, fostering strong client relationships and presenting product offerings and solutions to drive business growth, primarily with start-up ventures focusing on vegan and other dietary-constrained alternatives.
- **Graduate & Undergraduate Teaching Assistant** Jan 2023 – Dec 2023
  Carnegie Mellon University *Pittsburgh, PA*
  - **Course Support**: 24-791 Mechanical Engineering Graduate Seminar I, 24-370 Mechanical Design: Methods and Applications, 24-221 Thermodynamics.
  - **Classroom Management and Grading**: Collaborated with professors to manage classroom behavior and grade a variety of student work, including homework, quizzes, projects, and tests, promoting a positive and conducive learning environment.

Machine Learning Projects

- **Multi Agent Reinforcement Learning with LLMs for Safe Path Planning**: Utilized Isaac Gym to train hierarchical reinforcement learning (HRL) policies for multi-agent quadrupedal systems, combining high-level planning and low-level control. Integrated GPT-4 for context-aware obstacle classification and dynamic penalty adjustments, improving safety and efficiency in path planning. Advanced semantic reasoning in HRL to enable effective navigation in sensitive and dynamic environments.
- **Cloud-Based Machine Learning with FIFA Dataset**: Deployed a neural network model for FIFA dataset analysis on Google Cloud, predicting player skill values from 100+ attributes. Conducted end-to-end ML tasks, including preprocessing, feature engineering, and building models in PyTorch and Spark. Optimized hyper-parameters to improve Test Accuracy from 80 to 95 percent.
- **Autonomous Tesla Vehicle Control and Localization Simulation**: Developed and implemented an Extended Kalman Filter (EKF) SLAM system for vehicle localization and mapping in GPS-limited, noisy environments, integrating Python-based solutions with Webots simulations. Optimized algorithms to estimate dynamic vehicle states and static map features using range and bearing measurements, achieving trajectory tracking with an average deviation 5m and maximum deviation 10m. Validated performance through real-time simulations and visualized state deviations, meeting strict criteria for trajectory adherence.

Skills and Activities

- **Software/Applications:** SolidWorks, MATLAB, Simulink, ANSYS, Mastercam, Excel (Advanced), Python, SQL, NoSQL Databases, Java, C++, LaTeX, Salesforce, EOS Laser Powder Bed Fusion , Free Melt Electron Beam Powder Bed Fusion, ExOne Binder Jet, 3D Printing, CNC Machining, Manual Machining, MIG Welding
  Software Packages: TensorFlow, PyTorch, Keras, Python (NumPy, Pandas, SciPy, SciKit-Learn, OpenCV, Matplotlib, Anaconda, Jupyter Notebook, Pandas), Apache Spark, Apache Kafka, Docker, Kubernetes, FastAPI, SQL, NoSQL DB, Neo4j, MongoDB
  Activities/Honors: NCAA Division III Varsity Track & Field, 3x Dean's List, University Honors
  Languages: English (Native), Tamil (Fluent)