Aren Desai

https://arendesai.com • github.com/ArenKDesai

Education

University of Wisconsin – Madison — Madison, WI

Computer Science & Data Science BS. Google Developer Student, dotData, Robotics, and Badminton club member. — Spring 2025

Technical Skills

Programming Languages: Python, SQL, R, Java, C, Matlab, Julia, Javascript

Technologies/Frameworks: Apache Airflow/Spark/Hadoop/Kafka/Cassandra, Google Cloud Platform (GCP), Docker, ArkGIS, PowerBI, MySQL, PostgreSQL, Microsoft Azure, PyTorch, TensorFlow, ROS2, Unity, Blender, Gazebo, OpenGL, WebGL

Experience

Madison Gas & Electric — Madison, WI

Energy Supply and Trading Intern — May 2024 – Present

- Revamped the outdated hourly dispatch simulator with **Scikit-Learn optimization routine's GPU-optimized algorithms** and **NumPy matrix multiplications**, speeding up the runtime by **97.3%**
- Built a **Microsoft Power Apps** frontend in Python for the hourly dispatch simulator with **Flask**
- Evolved LMP forecasting algorithm with a **3-dimensional CNN** with **Tensorflow**, decreasing MSE by **7%**

Compeer Financial — Sun Prairie, WI

Data Analytics Intern — Jan 2023 – Jan 2024

- Queried agricultural field & loan data in **SQL**, organized in **Python** & **R** for **quantitative analysis**.
- Explored implementation of **K-NN grouping** of RAU vs average loans and GPT-3 Gen-AI on Compeer data.
- Facilitated the introduction of **PyTorch** and **Microsoft Azure** into the data warehouse.

Personal Projects

PJM Load Forecaster (github.com/ArenKDesai/PJMEnergyConsumption) | *Python, PyTorch, Apache Airflow* — Mar 2024

- Orchestrated the streaming of data from 8 load-serving entities with **Apache Airflow**
- Implemented a **temporal fusion transformer** with **PyTorch** Lightning and Forecasting with a **0.21 MAPE**
- Deployed the model on github for continuous implementation/deployment/training (**CI/CD/CT**)

WRoverSoftware (github.com/WisconsinRobotics/WRoverSoftware) | *ROS2, CAN, VESC, Python, C++* — Dec 2024

- Modeled robotic arm movement in **Rviz** and **Gazebo** using **RelaxedIK** for smooth and realistic motion planning.
- Implemented a **ROS2 node** for formatting, compiling, and transmitting **CAN** messages to motor controllers.
- Built a **ROS2 node** to process controller inputs and convert them into actionable CAN messages for precise motor control.

Leadership Experience

Google Developer Student Club — Madison, WI

Finance Lead / Treasurer — Sep 2023 – May 2024

- Managed the GDSC bank account withdrawals and deposits.
- Planned GDSC meetings, tech-talks, and workshops with the GDSC core team, including Cheesehacks.

Wisconsin Robotics Club — Madison, WI

Arm Software Developer — Sep 2024 – May 2025

- Developed and maintained the ROS2 core codebase for the Wisconsin rover.
- Initialized and polished motor control and status communication for swerve and drive motors.
- Refactored the inverse kinematics solver to allow the arm to move with precise control.