OMKAR POTE

🌐 omkarpote.com   ✉ omkrpt@gmail.com   ⌨ github.com/omkrpt   in linkedin.com/in/omkrpt

Education

Purdue University   **August 2024 – Present**
M.S. in Computer and Information Technology
Research Focus: Data Management for Machine Learning Pipelines
Graduate Coursework: AI, Data Mining, Responsible Data Science, Natural Language Technologies

Indian Institute of Technology, Madras   **July 2016 – May 2020**
Bachelor of Technology

Technical Skills

AI/ML: Explainable AI (XAI), Algorithmic Fairness, Causal Inference, Counterfactual Explanations, Data Distribution Shift, Robustness, Tabular Data Modeling, Time Series Classification, Dimensionality Reduction, NLP
Data Engineering: Data Cleaning, ETL, Spark, Databricks, Hadoop, MySQL, MongoDB, Neo4j
Languages: Python, Java, C/C++, Scala, Bash, SQL, LaTeX
ML Frameworks: Scikit-learn, TensorFlow, PyTorch, Keras
Software Development: OOP, SOLID, System Design, Microservices, Spring Boot, REST APIs, CI/CD, Git, Agile
Cloud & Containers: AWS(EC2, EMR, S3), DigitalOcean, Docker, Kubernetes
Tools/Frameworks: MATLAB, Simulink, OpenMP, RabbitMQ, Redis, NodeJS, ReactJS

Research Experience

Purdue University   **Aug 2024 – Present**
Graduate Research Assistant (Part-Time)
- Working in the Responsible Data Science Lab under Dr. Romila Pradhan.
- Current research focus area: Data Management for Machine Learning Pipelines.

IIT Madras   **Oct 2023 – Jun 2024**
Project Scientist, iACE Lab
- Worked in the American Express Lab for Data Analytics, Risk & Technology (DART) / Intelligent Applications in Chemical Engineering (iACE) Lab under Dr. Rajagopalan Srinivasan.
- Focused on Explainable AI methods for Fault Detection and Diagnosis in Process Monitoring Systems.
- Increased the reliability and trustworthiness of black-box AI systems by developing model-agnostic, counterfactual-based explainability techniques for multivariate time series classification.

Publications & Presentations

Peer-Reviewed Publications
- **Pote, O.**, Majji, D., Bhakte, A., Srinivasan, B., Srinivasan, R., *"Timeseries-based Counterfactual Explanations for Process Fault Diagnosis and Recovery"*. 35th European Symposium on Computer Aided Process Engineering (ESCAPE), 2025 (link)

Poster Presentations
- *"Unlearning Machine Learning Bias using Task Vector Arithmetic"*. (link) 26th CERIAS Annual Cybersecurity Symposium, Purdue University, 2025 - ***Second Place, Best Poster Award***
- *"Resolving Machine Learning Bias using Task Vector Arithmetic"*. Purdue AARC Applied AI Day, Purdue University, 2025
- *"Explaining AI-based System Decisions in Structural Engineering"*. NSF IUCRC VISER Center Planning Meeting, University of Houston, 2024

Academic Service

- External Reviewer, IEEE International Conference on Data Engineering (ICDE) 2025.
- External Reviewer, International Conference on Extending Database Technology (EDBT) 2026.

Professional Experience

IIT Madras   **Oct 2023 – Jun 2024**

Software Quality Mentor, HILCPS Lab

- Worked with the Human-in-the-Loop Cyber-Physical Systems (HILCPS) Lab, led by Dr. Babji Srinivasan.
- Led architecture, planning, and cloud migration for an IoT project using Flutter, Django, and Embedded C, while ensuring enterprise-level best practices.
- Conducted code reviews, refactoring, and fortnightly sessions on agile methodologies, version control, code hygiene, unit testing, and design patterns.

Capillary Technologies   **May 2020 – Sep 2023**

Software Development Engineer, Payments   *Dec 2021 – Sep 2023*

- Led the design and implementation of POTATO, a robust microservice-based solution enabling seamless, cashless fuel transactions, with secure APIs for payment providers, fuel stations, and third-party services.
- Built and optimized the system using Spring Boot, MySQL, MongoDB, and RabbitMQ, handling 10,000+ transactions per minute, while also establishing CI/CD pipelines and real-time monitoring for performance.

Big Data Engineer, Extract-Transform-Load (ETL)   *Oct 2020 – Nov 2021*

- Managed Capillary's in-house data warehousing and ETL system for its flagship CRM and BI product, processing 6+ billion daily records into a star schema model with facts, dimensions, and KPIs.
- Developed REST APIs for data transfer between microservices and optimized real-time Spark queries on AWS EMR clusters.

Intern   *May 2020 – Sep 2020*

- Built internal developer tools to handle the ETL process. This includes GUIs for end-to-end control and monitoring of executions from Neo4j, where the queries are stored as a Directed Acyclic Graph.

Tesco   **May 2019 – Jul 2019**

Software Engineering Intern

- Automated Tesco's food donation system by eliminating a labor-intensive step in stock management, optimizing processes for 2500+ stores and 6000+ charities.
- Developed a Donation Assistant API for product classification, implemented an Apache Nifi and Python Flask-based pipeline, reducing administrative workload by 20%, and enhanced donation accuracy/relevance by over 15% through data analysis using R tidyverse package.

Crest IT Consulting   **Jun 2018 – Jul 2018**

Web Development Intern

- Took up a complete rebranding initiative for the company, involving the development of a new website, logo, and brand identity. Check out crestit.in.

Activities and Projects

Projects

- **Yuj (formerly Caval):** Contributed as a founding team member for this IITM-based startup, which provided doorstep vehicle repair services. Led the development of the entire branding, logo, website, app, and other marketing materials.
- **ChemClave:** Created the ChemClave 2017 website as part of the WebOps team, for the annual event organised by the Chemical Engineering Society (CheS) of IIT Madras.
- **Cuckoo Dooku:** Developed a Star Wars-themed, open-source Chrome extension for productivity. Received a commendation in the FOSS hackathon 2021. See github.com/omkrpt/cuckoo-dooku
- **Snake Game:** Coded the game from scratch as a high school project. See omkarpote.com/#snake

Graphic Design

- **Technical Proficiency:** Skilled in graphic design using the Adobe Suite including Photoshop, Illustrator, Premiere Pro, and Indesign
- **Freelance Experience:** Freelanced for various clients from Dec'16 to Aug'18. Portfolio at behance.net/omkarpote
- **Head of Design, Entrepreneurship Cell, IIT Madras:** Led a team of 16 designers and associate designers, developing creative content for digital and printed media, over two semesters.
- **Inter IIT Sports Meet:** As part of the organizing team of the 2017 edition, designed marketing content, venue setups, and ambience for the tournament.

References available upon request.