OMKAR POTE

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Education

Purdue University   **August 2024 – Present**
Ph.D. in Computer and Information Technology   *4.0/4.0*
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.

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.

Extracurriculars
- **Department Soccer Team Captain:** Led the Chemical Engineering department soccer team to a third-place finish in the IITM Inter Department League 2018-19.
- **Karate:** Black belt holder with numerous accolades and medals on the national level, showcasing over 11 years of dedicated practice.
- **Music Certification:** Cleared ABGMVM's Hindustani Classical Music Exam with a score of 45/50.

References are available upon request.

Dear VLDB Shadow PC Chairs,

This letter supports my student Omkar Pote's application for a shadow PC committee member for VLDB 2026. Omkar is a first-year Ph.D. student in the Department of Computer and Information Technology at Purdue University and has a solid background in explainable AI. He is beginning to immerse himself in reading and reviewing database research papers related to data quality in machine learning and has *externally* reviewed papers in ICDE. Participating in VLDB's shadow PC committee would provide Omkar with first-hand reviewing experience in a top-tier data management venue that would benefit his research career in the data management community.

Please consider this letter my recommendation for Omkar to participate in the shadow PC committee. Please also reach out to me if additional information is needed.

Best,

Romila Pradhan

Romila Pradhan
Assistant Professor

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Purdue University
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