Omkar Pote

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Education

Purdue University **August 2024 – May 2026**
Master of Science in Computer and Information Technology

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

Technical Skills

Primary Skills: Java Spring Boot, RESTful services, OOP, System Design, C++, Microservices
Languages: Java, C/C++, Python, Javascript, Scala, PHP, Bash, LaTeX
Big Data: ETL, Spark, Databricks, AWS (EC2, EMR), DigitalOcean, Hadoop, MySQL, MongoDB, Neo4j
Software Development: OOP, SOLID principles, System Design, JUnit/Mockito, CI/CD, Agile methodologies, Git, Observability and Monitoring
AI/ML: Time series classification, XAI, Counterfactuals, Causality, GANs
Technologies/Frameworks: MATLAB, Simulink, OpenMP, Parallel programming, Docker, Kubernetes, RabbitMQ, Redis, Apache Nifi, Payment gateways, NodeJS, ReactJS, HTML/CSS, Microsoft Office Suite

Experience

Project Scientist, IIT Madras **Oct 2023 – Jun 2024**
Research Assistant, iACE Lab *Oct 2023 – Jun 2024*

- Working in the American Express Lab for Data Analytics, Risk & Technology (DART) / Intelligent Applications in Chemical Engineering (iACE) Lab under Prof. Rajagopalan Srinivasan.
- Current research focus: Explainable AI methods for Fault Detection and Diagnosis in Process Monitoring Systems.
- Working on increasing the reliability and trustworthiness of black-box AI systems used by chemical plant operators with varying domain expertise and experience.
- Developing model-agnostic, counterfactual-based explainability techniques for DNN-based multivariate time series classification models

Software Quality Mentor, HILCPS Lab *Oct 2023 – Jun 2024*

- Concurrently involved with the Human-in-the-Loop Cyber-Physical Systems (HILCPS) Lab, led by Prof. Babji Srinivasan.
- I oversee the project architecture and planning for an IoT project consisting of Flutter, Django, and Embedded C modules. My main responsibility here is to leverage my industry experience to guide the research group on implementing enterprise-level best practices.
- My current focus is to move the application to the cloud. I also assist in code review, refactoring, and implementing design patterns like Model-View-Controller.
- I conduct interactive fortnightly sessions for the team, covering various aspects of software engineering, including agile methodologies, version control, code hygiene, unit testing, and design patterns.

Capillary Technologies **May 2020 – Sep 2023**
Software Developer, Payments *Dec 2021 – Sep 2023*

- Designed and implemented POTATO (Potato Over-The-Air Transactions Orchestrator), a robust and comprehensive solution that facilitates seamless, cashless fuel transactions at gas stations.
- Executed the entire development process, constructing the microservice architecture including a Spring Boot-based application and databases using MySQL and MongoDB.
- Built highly secure APIs for communication with Payment Service Providers, fuel stations, and third-party services.
- Continually optimized the system performance, which leverages RabbitMQ to asynchronously handle real-time transactions, accommodating a user load exceeding 10,000 per minute.
- Additionally, took charge of instituting a CI/CD pipeline and implementing real-time monitoring systems to ensure optimal functionality.

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

- Worked on the in-house data warehousing and ETL system managing Capillary's flagship CRM and BI product, processing over 6 billion new daily records and compiling them into a star schema-based model with facts, dimensions, and KPIs.
- Developed REST APIs for transferring transactional and user data between internal microservices.
- Managed real-time executions, debugging, and optimizing Spark queries on AWS Elastic Map Reduce (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 Football Team Captain:** Led the Chemical Engineering department football 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 an impressive score of 45/50.

References

- **Prof. Rajagopalan Srinivasan** (raj@iitm.ac.in) Professor, Chemical Engineering, IIT Madras
- **Prof. Babji Srinivasan** (babji.srinivasan@iitm.ac.in) Associate Professor, Applied Mechanics, IIT Madras
- **Mr. Saurabh Kumar** (saurabh.kumar@capillarytech.com) Director of Engineering, Capillary Technologies