

# SHARVARI DESHMUKH

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## Education

University of California San Diego, USA

Sep 2023 – Mar 2025

*M.S. in Electrical & Computer Engineering (Signal & Image Processing)*

**Courses:** ML for Physical applications, GPU Programming, Medical Imaging, Intro to Visual Learning, Digital Image Processing, Wavelets & Filterbanks, Statistical Learning, Programming for Data Analysis

Birla Institute of Technology and Science, Pilani, India

Aug 2013 – Dec 2017

*B.E. (Hons.) in Electronics & Instrumentation Engineering*

## Technical Skills

**Languages & Frameworks:** Java, Golang, Python, C/C++, TypeScript, React, PyTorch, TensorFlow

**Tools & Competencies:** AWS, MySQL, MongoDB, Redis, Apache Kafka, Docker, Kubernetes, Terraform, Git, Linux, Computer Vision, Machine Learning, Data Structures & Algorithms, Software Design Patterns

## Experience

Amazon Robotics | *Software Engineer* | *Fleet Management*

North Reading, MA | Apr 2025 – Now

- Designed and deployed fleet-level **task scheduling & optimization** features along with new automation workflows for multi-robot Proteus systems spanning 30+ warehouses.
- Built **static map integration** for robot navigation, enabling destination resolution and **real-time obstruction detection**; enhanced Andon framework for automated issue detection.
- Drove zero-downtime migration of a critical tasks datastore used by 20+ services, resolving sustained throttling via a phased rollout plan; **reduced critical-path latency by 75%** and eliminated reliability risk.
- Led **agentic AI development** in the team by building MCP server for monitoring and troubleshooting live and historical task-, workflow- and fleet-level events.

Grab | *Software Engineer* | *Digibank, Compliance*

Bangalore, India | Mar 2022 – Jun 2023

- Designed and implemented an instant KYC pipeline for Singapore ID verification, utilizing automated text extraction and face matching to cut onboarding time from **3 days to under 2 minutes**.
- Engineered a modular workflow engine with a **Golang-based state machine** to streamline multi-step data flow and integrate with Indonesian credit bureaus and telco providers for the Loan Origination System.

Paytm Money | *Software Engineer* | *Payments*

Bangalore, India | Jan 2021 – Oct 2021

- Developed distributed & scalable features within core payments service, effectively managing **50,000 transactions per day** across diverse financial products including Mutual Funds, Equities & EdTech.

Goldman Sachs | *Software Engineer (Analyst)* | *Securities*

Bangalore, India | May 2020 – Jul 2020

- Part of the Systematic Market Making - Execution Services team in FICC E-Trading division which worked with electronic market making and algorithmic execution to ensure optimal market access for clients.

Citibank | *Software Engineer (Analyst)* | *Equity Trading*

Pune, India | Aug 2018 – May 2020

- Built low latency Java applications using (openHFT) Chronicle based framework achieving **microsecond latency** for in-house High Frequency Trading applications connecting to Hong Kong Futures Exchange.

## Research & Projects

Camera-to-Robot pose estimation for robotic arms | *Advanced Robotics and Controls Lab, UCSD*

- Explored advanced markerless camera-to-robot pose estimation techniques, focusing on leveraging vision-language models and self-supervised learning to optimize accuracy and adaptability in real-world robotic systems.

Kidney stone fragments classification | *Advanced Robotics and Controls Lab, UCSD*

- Integrated **segmentation models with optical flow** for moving object detection and classification in ureteroscopy videos, enabling precise identification of kidney stones, fragments, and dust to automate laser settings in lithotripsy.

Real-time multimodal device state classification for industrial devices

- Built a multimodal deep learning model for real-time device state classification, achieving **98.2% accuracy** on Mudestra dataset and a **92.5% model size reduction** for efficient edge deployment.

Diffusion-based image restoration: A zero-shot approach

- Implemented a zero-shot image inpainting technique based on the **Denoising Diffusion Null-Space Model**, achieving benchmark results for image reconstruction on occluded surgical images by training on the IEEE Dreaming dataset.

Histopathology image classification for cancer diagnosis

- Conducted comparative analysis between **CNNs & Vision Transformers**, fine-tuned through transfer learning & data augmentation; achieved **99% accuracy** on LC25000 dataset using **API-Net and Swin-Transformers**.