

PRAJWAL PRATHIKSH

Scientific Software Developer | Scientific ML | Agentic AI & GPU Pipelines

MS Computational Science student at UT Austin specializing in scientific ML, numerical methods, optimization, and GPU-accelerated AI pipelines; 3+ years building production data-driven systems and agent-assisted analysis workflows. (OPT/CPT eligible)

Austin, TX | prajwal.prathiksh@gmail.com | github.com/Prajwal-Prathiksh | linkedin.com/in/prajwal-prathiksh

EDUCATION

The University of Texas at Austin

Aug 2025 – Expected May 2027

M.S., Computational Science, Engineering, and Mathematics (Oden Institute)

GPA: 4.0/4.0

Indian Institute of Technology Bombay

Jul 2018 – Aug 2023

Dual Degree (B.Tech + M.Tech), Aerospace Engineering

GPA: 9.03/10

Dept. Rank: 3 | Undergraduate Research Award (2023) | MITACS Globalink Research Award – Univ. of Waterloo (2022)

TECHNICAL SKILLS

AI/ML: PyTorch, ViTs, CNNs, CAMs, foundation models, active learning, OpenCV, OCR, LLMs, RAG, LangChain, VectorDBs
GPU & HPC: CUDA, CuPy, OpenMP/MPI, SLURM, Cython, Numba, pybind11, Async I/O, Nvidia Nsight, dynamic load balancing
Software: Python, C/C++, MATLAB, SQL, Bash, Go, Git, testing/debugging, reproducible pipelines, documentation
Scientific Computing: Numerical linear algebra, nonlinear optimization, inverse problems, PINNs/GINNs, SPH

EXPERIENCE

Software Engineer Intern, Scientific AI & Computer Vision

May 2026 – Present

KLA, Machine Learning & Data Sciences, MACH Team

Austin, TX

- Developed an AI pipeline for wafer defect inspection using **ViT embeddings**, multi-label classification, and CAM-based pseudo-segmentation to generate interpretable defect masks without manually curated segmentation labels
- Designed a hybrid **ViT + morphology-guided CNN** architecture with gated fusion, combining learned semantic features with domain-specific shape priors to produce robust, defensible, and reviewable inspection outputs
- Built a **GPU-accelerated SEM analysis pipeline** for batched image processing and contour extraction; contributed to physics-inspired SEM synthetic data generation and **ConvNeXt-FPN** segmentation; developing **active learning** heuristics and model failure modes to prioritize challenging images for targeted expert annotation

Deep Learning & Scientific Computing Researcher

Oct 2025 – Present

Research Project with Prof. George Biros (CosmicAI / Oden Institute)

Austin, TX

- Designed a **Physics-Informed Neural Network (PINN)** regressor utilizing custom Hessian-informed PCA and a multi-objective loss to regularize the solution manifold and stabilize learning in data-scarce regimes
- Engineered **CUDA kernels** (Nsight profiled & MPI distributed) and parallelized linear algebra routines to accelerate inference. Achieved **150× speedup** (CPU baselines) and real-time evaluation of **1B+** data points (**multi-GPUs**)

Data Scientist (Anheuser-Busch InBev)

Aug 2023 – Jul 2025

Global Finance Analytics

Bangalore, IN

- Led a cross-functional team of **5+** to design and deploy an end-to-end automated payment reconciliation system using **LLM agents, OCR, NLP, and ERP rules**, reducing manual intervention and global clearing times by **60%**
- Productionized **OCR + LLM** document parsing pipeline achieving **98% accuracy**, outperforming Azure DocAI by **30%** (200+ docs/min); optimized Python codebases via **Cython & Async I/O** for **4.6× runtime reduction**
- Architected payment leakage detection system across 10+ countries delivering **\$5M+** EBITDA impact (2024)
Awards: Rockstar Rookie (2/30+ Globally), Excellence & Innovation (Team), Individual Spot Awards

Algorithm Development & HPC Engineer (Master's Thesis)

Jul 2022 – Jul 2023

Indian Institute of Technology Bombay (IITB), Advisor: Prof. Prabhu Ramachandran

Mumbai, IN

- Benchmarked 5 SPH turbulence algorithms (Re 10^3 – 10^6); optimized C++ solvers with **OpenMP parallelization** on a 4-node HPC cluster, achieving robust scaling to **40k+** particles with validated convergence across regimes
- Built diagnostics pipeline for large-scale time-series (Vorticity, FTLE, Energy Spectra) enabling real-time turbulence simulation validation and data-driven performance analysis; **Award:** Best Master's Thesis Nationally (ASI, 2023)

SELECTED TECHNICAL PROJECTS

Nano-Satellite Star Tracker (Systems & Simulation): Led a **25-member** team (*Systems Head: GNC, Instr.*) at IITB-SSP; built an open-loop simulation framework & a real-time star-tracking pipeline (centroiding & pattern-matching) for attitude determination on resource-constrained hardware with **multi-mode autonomy** (startup/track/acquire).