Mohnish Harwani

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EDUCATION

Bachelor of Science, Computer Science　　　　　　　　　　　　　　　　June 2023 – May 2026
Minor in Mathematics . GPA: 3.87
West Lafayette, IN

WORK EXPERIENCE

Software Engineering Intern　　　　　　　　　　　　　　　　　　　　　May 2025 – Aug 2025
Kaiser Permanente, Pleasanton, CA
- Introduced and designed accessible AI features now live in app used by 10+ million users.
- Improved concurrency on production-level code handling 50 million orders annually.
- Developed KPEvents: an interactive, AI-powered health calendar utilizing Apple Foundation Models to generates custom fitness and medication routines based on Kaiser medical records and Apple HealthKit data.
  - Prioritized data privacy with models and health data stored locally on-device, never accessed externally.
  - Performed research on appropriate LLM frameworks for speed, accuracy, and applicability to in healthcare settings.

Software Developer　　　　　　　　　　　　　　　　　　　　　　　　Aug 2024 – Dec 2024
GE Aerospace & Purdue University
- Developed standardized software tools for evaluating control systems for factory robots
- Validated models for motion planning, stabilizing and smoothing movement for robotic arms

RESEARCH EXPERIENCE

Research Assistant　　　　　　　　　　　　　　　　　　　　　　　　Jan 2024 – Present
nanoHUB, Purdue University
P.I.: Prof. Alejandro Strachan
- Developed nanoHUB AURA: an open-source LLM-powered research assistant utilizing multi-agent architecture, fine-tuning, and access to millions of simulations and hundreds of tools from the nanoHUB platform to assist users with requests on the site (PrePrint available, paper submitted to Nature Machine Intelligence).
  - Serves as an improvement to RAGs: instead of simply having access to large amounts of data, AURA is able to retrieve, access, run physics simulations on published codebases and tools.
  - Presented at Google's 2025 AI Summit in Indianapolis
- Applied active learning-based optimization to materials discovery, achieving 10x decrease in computational resources (published in Computational Materials Science, Elsevier)

CLASS PROJECTS

CS 573: Data Mining – Class Project　　　　　　　　　　　　　　　August 2025 – Present
P.I.: Prof. Rajiv Khanna
- Integrated Sharpness-Aware Minimization (SAM) into learned optimizer training processes to improve generalization across datasets and model architectures

CS 592: Reinforcement Learning – Class Project　　　　　　　　　　Aug 2024 – Jan 2025
Advisor: Prof. Joseph Campbell

- Analyzed and developed a Zeroeth-Order optimizer using CMA-ES for neural networks, and demonstrated faster initial optimization than traditional optimizers.

CS 577: Natural Language Processing – Class Project   Aug 2025 – Present
- Fine-tuned off-the-shelf learned optimizers for language model pre-training.
- Adapted PEFT techniques such as LoRA to apply on learned optimzers

PUBLICATIONS

Accelerating active learning materials discovery with FAIR data and workflows: A case study for alloy melting temperatures

Mohnish Harwani, Juan Carlos Verduzco, Brian H. Lee, Alejandro Strachan

Computational Materials Science, Elsevier **Access at Computational Materials Science, Elsevier**

Autonomous Universal Research Assistant (AURA): Agentic AI meets nanoHUB's FAIR Workflows and Data

Juan Carlos Verduzco Gastélum, Mohnish Harwani, Daniel Mejia, Alejandro Strachan

ChemRxiv Preprint

Access at ChemRxiv

POSTERS & PRESENTATIONS

- **Integrating AI into nanoHUB: Toward Intelligent and Connected Scientific Workflows**
  J. C. Verduzco, D. Mejia, M. Harwani, G. Klimeck, A. Strachan
  Poster Link
  Google 2025 AI Summit, Indianapolis
- **nanoRA: A Multi-Agent Research Assistant for Autonomous Scientific Workflows on nanoHUB**
  J. C. Verduzco, M. Harwani, A. Strachan
  Poster Link
  Artificial Intelligence for Materials Science (AIMS) Workshop

TECHNICAL SKILLS

Languages: Python, Java, C/C++, SQL, JavaScript, HTML/CSS, R, MIPS Assembly, Swift
Frameworks: Flask, FastAPI, PyTorch, TensorFlow, LangChain
Developer Tools: Git, VS Code, Visual Studio, Jupyter, IntelliJ, Cursor, Docker, Kubernetes
Specializations: Machine Learning, Deep Learning, Meta-Learning, LLMs, Optimization

HONORS & AWARDS

Dean's List and Semester Honors, Purdue University
(Every Semester)

HIGHLIGHTED COURSEWORK

- **Computer Vision and Deep Learning (CS 593:CVD)**
- **Vector Databases (CS 593:VDB)**
- **Reinforcement Learning (CS 592)**: Class Project: Zeroeth-Order Optimization
- **Natural Language Processing (CS 577)**: Class Project: Fine-Tuned Learned Optimizers for LLM Pretraining
- **Data Mining (CS 573)**: Class Project: Robust Learned Optimizers
- **Software Engineering and Robotics (CS 593:SWR)**: Class Project: Interface to control robots with LLMs
- **Statistical Methods (STAT 511)**
- **Artificial Intelligence (CS 471)**
- **Probability (STAT 416)**
- **Analysis of Algorithms (CS 381)**
- **Data Structures and Algorithms (CS 251)**