PARTH BHALERAO

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Google Scholar ◇ Github ◇ LinkedIn ◇ AI Blogs

EDUCATION

- **Santa Clara University (SCU)** *Jun 2025 – Present*
  Ph.D. in Computer Science and Engineering — AI Specialization
  Guided by Dr. Oana Ignat
  Current Research Work/Interests: Building AI Agents, Multi-modal AI (Image+Video+Audio), RAG

- **Santa Clara University (SCU)** *Sep 2023 – Jun 2025*
  M.S. in Computer Science and Engineering GPA: 3.71/4.0
  Thesis: Multi-Agent Image Generation System
  Selected Courses: Directed Research — AI & NLP, Distributed Systems, Algorithms

- **Ramdeobaba University, India** *Aug 2019 – May 2023*
  B.E. in Electronics and Computer Science GPA: 9.4/10.0
  Selected Courses: Artificial Intelligence, Machine Learning, Data Analysis, Software Engineering

INDUSTRY EXPERIENCE

Software Automation Developer – SCU, Santa Clara, CA **Jan 2024 – Aug 2025**

- Built automation scripts for Workday processes, streamlining enrollment and salary calculations.
- Implemented structured logging with ELK, adding correlation IDs to improve traceability and cut debugging time by 60%; enhanced SCU website UI/UX with new pages and components.

Machine Learning Intern – Innovative Technologies, New Delhi **Jun 2022 – Nov 2022**

- Researched and trained ML models for 3-lead ECG rhythm prediction, achieving ∼93% accuracy with sensor integration.
- Contributed a novel dataset with labeling standards and built XML automatio pipelines for faster data extraction and preprocessing.

Systems Programmer Intern – ECDS, Nagpur, MH, India **Dec 2021 – Apr 2022**

- Developed C++ libraries for system software, optimizing hardware–software interaction.
- Reduced IoT transfer latency from 5–7s to milliseconds, drastically improving end-to-end system performance.

RESEARCH EXPERIENCE

Research Assistant – AIM Lab, SCU **Oct 2024 – Present**

- *Mentorship4All: Multi-Agent QA Extraction for Long-Form Mentorship Videos* — Proposed a multi-agent framework with novel chunking for QA extraction in mentorship videos; benchmarking single vs. multi-agent, showing stronger multilingual faithfulness, relevance, and coherence.
- *MosAIG – Multi-Agent Multimodal Models for Multicultural Image Generation (ArXiv)* — Proposed a multi-agent framework for multicultural image generation, releasing a 9,000-image dataset and pipeline; improved captioning workflows with fairness-driven modifications; work is currently under review.

Research Assistant – HASO Labs, Santa Clara University **Sep 2023 – Dec 2023**

- *GPU-Optimized Video Processing Pipeline* — Used CLIP+Mediapipe for 300GB+ data, reducing embedding time from 50+ to ∼21 hours; deployed models on AWS (Lambda, SQS, API Gateway) with full META-VR integration.

Research Assistant – RBU **Nov 2022 – Apr 2023**

- *Performance Analysis of YOLOv5 for ASL Detection (SSRN Page)* — Designed a YOLOv5 evaluation for ASL detection using PyTorch, TensorFlow, and multi-GPU setups; ran 4,500 experiments across CPUs/edge devices, identified misclassifications, and open-sourced optimal frameworks.

PUBLICATIONS

- **ECG Classification Using Machine Learning on Wave Samples for the Indian Population**
  Bhalerao P, Essaji H, Korde M — IEEE InCACCT, 2023 — PDF
- **Design of a Dynamic Traffic Signal System with IoT and Digital Circuit Integration**
  Bhalerao P, Thakre P, Dongre A — IEEE ICCCNT (Top Conference), 2023 — PDF
- **Point of Care Device for Measurement of Vital Parameters**
  Bhalerao P, Korde M — Springer SmartCom International Conference, 2023 — PDF

CONFERENCE PRESENTATIONS

- **BayLearn Conference (Oct 2025, CA)** — *Presenter*
  Presented *Mentorship4All* and *MosAIG*, demonstrating multi-agent frameworks for multilingual QA extraction and multicultural image generation. Engaged with top researchers and engineers from NVIDIA, Apple & Netflix on open-source, fairness-driven LLM Agents, and scalable AI systems.
- **International Biomedical Conference, RBU (Aug 2022)** — *Best Research Poster Award*
  Presented a point-of-care device integrating biomedical sensors with machine learning for real-time diagnostics; recognized for innovation, clarity, and applied impact.

ACHIEVEMENTS

- **Meta Hackathon, SFO (Oct 2024) – 3rd Place**
  Built GitLlama, an AI-powered tool using RAG + agentic AI for repository insights and deep analysis.
- **NVIDIA AI Global Hackathon (Jun 2024) – Top 10 Featured Project**
  Designed AI-Based System Design Builder with smooth UI and natural-language system design.
- **Patent Granted – Govt. of India (Nov 2024)**
  Invented a point-of-care device integrating biomedical sensors with ML for portable diagnostics.
- **Ramdeobaba University (May 2023) – Best Student & Scholarship**
  Awarded INR 10,000+ scholarship and Best Student Award as department topper.

TEACHING & MENTORSHIP

- **Research Mentor – AIM Lab, SCU** **Jun 2025 – Present**
  Leading 5–6 student researchers on Agentic AI projects, guiding code and workflow.
  Organized paper reading groups and explained complex flows via whiteboard sessions.
- **Teaching Assistant – Algorithms, SCU** **Sep 2025 – Present**
  Assisted in teaching undergraduate Algorithms, covering design and analysis.
  Conducted recitations, workshops, and office hours to support student learning.
- **Teaching Assistant – Data Structures & Algorithms, RBU** **Apr 2023 – Jul 2023**
  Taught core DS & Algorithms in Java, from arrays to advanced graph-based topics.
  Supervised LLD projects with focus on OOP principles and real-world coding practices.

SKILLS

Programming	Python, C/C++, CUDA Programming, Java
Frameworks & Libraries	PyTorch, TensorFlow, scikit-learn, HuggingFace, LangChain, CrewAI
Other	Vector Databases & RAG pipelines, SQL, Numpy, Pandas, OpenCV