

Ketan Suhaas Saichandran

ketansuhaas@gmail.com — +1 (617) 959-7695 — Webpage — Google Scholar — LinkedIn — GitHub

EDUCATION

Boston University

MS in Artificial Intelligence — **GPA: 3.96/4.00**

Boston, MA, USA

September 2023 — May 2025

Thesis: Active feature acquisition for efficient & transparent medical diagnoses — Advisor: Dr. Vijaya B. Kolachalama

Indian Institute of Technology Roorkee

B.Tech in Electrical Engineering — **CGPA: 8.65/10.00**

Roorkee, India

July 2019 — July 2023

RESEARCH EXPERIENCE

Kolachalama Lab, Boston University

Staff Scientist, Boston University School of Medicine—PI: Dr. Vijaya B. Kolachalama

Boston, MA, United States

June 2025 — Present

- Led the development of a multi-agent system for scientific discovery in Alzheimer's disease, where specialized agents autonomously generate and test hypotheses by writing and executing code, orchestrating data analysis, and synthesizing literature.
- Developed a graph attention transformer-based vision-language model for visual-question-answering on neuropathology whole slide images, trained on **40,000+** labeled images from Boston Medical Center.
- Contributed to multiple projects including a curriculum learning-based training method for transformer models, improving average performance by **2-3%** across all feature missingness combinations, and a hierarchical active learning framework for clinical trials using reinforcement learning (under development).
- Contributed to manuscript writing, with publications in top venues including ICML 2025, and ongoing work targeting *Nature Medicine & Alzheimer's & Dementia*.

Graduate Researcher—PI: Dr. Vijaya B. Kolachalama

September 2023 — May 2025

- Introduced a state-of-the-art active feature acquisition (AFA) framework using explainable AI rankings as supervisory signals for decision-making networks, achieving **1-10%** improvement in accuracy across **9 datasets**.
- Developed CMIRL, a novel AFA method using information-theoretic metrics to guide reinforcement learning, achieving **2-3%** improvement in accuracy as part of master's thesis research.
- Built LLM systems to enable AI-augmented, interactive medical diagnoses supporting physicians in real time, achieving **10-20%** better accuracy than baseline models in predicting mixed dementia etiologies, contributing to a large-scale multimodal medical LLM project through medical data processing and LLM post-training.

Deepti Research Group, Boston University

Graduate Researcher—PI: Dr. Deepti Ghadiyaram

Boston, MA, United States

Sept 2024 — May 2025

- Led the development of SCoPE, a novel method to enhance alignment in diffusion models for complex scene generation, introducing a dynamic text-conditioning mechanism inspired by human artistic processes that refines coarse to fine during diffusion.
- Designed and conducted extensive experiments demonstrating that SCoPE outperforms Stable Diffusion on **83%** of benchmark samples, using mathematical methods for scheduling interpolation on the CLIP hypersphere to achieve smoother semantic transitions.
- Work accepted for oral presentation at a CVPR 2025 Workshop.

Banaji Implicit Social Cognition Lab, Harvard University

Research Assistant—PI: Prof. Mahzarin Banaji

Cambridge, MA, United States

May 2024 — May 2025

- Discovered alarming humanlike cognitive dissonance patterns in LLMs with effect sizes (**d = 2.164, 1.795, 3.775**) significantly larger than those observed in humans, revealing that GPT-4o shows irrational decision-making patterns moderated by free choice (**P < 0.001**) across **900+** experimental trials, and developed automated pipelines for multi-turn batch-processing on LLMs for research experiments.
- Contributed to manuscript writing and rebuttals, resulting in a publication and a reply letter in *PNAS*.
- Mentored an undergraduate thesis investigating complex biases in the GPT-Image-1 image generator.

Machine Learning Lab, Electrical Engineering Department, IIT Roorkee

Undergraduate Researcher—PI: Dr. Ambalika Sharma

Roorkee, India

August 2022 — May 2023

- Analyzed the nnU-Net architecture, validating its performance benchmarks for segmentation of cardiac MR images.
- Assisted with the training and performance analysis of Attention-guided residual W-Net, which attained comparably high dice coefficient values, reaching **0.94**.

PUBLICATIONS & PRE-PRINTS

1. **Saichandran, K. S.**, Elzokm, K., Guney, O. B., & Kolachalama, V. B. (2025). Agentic AI for automated hypothesis testing in Alzheimer's disease and related dementias. *To be submitted to Alzheimer's & Dementia*.
2. Lehr, S. A., **Saichandran, K. S.**, Harmon-Jones, E., Vitali, N., & Banaji, M. R. (2025). Reply to Cummins et al.: GPT reveals cognitive dissonance that is both irrational and alarmingly humanlike. *Proceedings of the National Academy of Sciences, USA*, *122*(20), e2501823122. <https://doi.org/10.1073/pnas.2518613122>
3. Singla, P., Singh, A., Garg, S., **Saichandran, K. S.**, & Garg, I. (2025). Thinking About Thinking: Evaluating Reasoning in Post-Trained Language Models *To be submitted to ACL*. <https://arxiv.org/abs/2510.16340>.
4. **Saichandran, K. S.**, Guney, O. B., Elzokm, K., & Kolachalama, V. B. (2025). Conditional mutual information-guided reinforcement learning for active feature acquisition. *IEEE Transactions on Artificial Intelligence* (under review).

5. Guney, O. B., **Saichandran, K. S.**, Elzokm, K., Zhang, Z., & Kolachalam, V. B. (2025). Active feature acquisition via explainability-driven ranking. *International Conference on Machine Learning (ICML)*. <https://icml.cc/virtual/2025/poster/45710>
6. **Saichandran, K. S.**, Thomas, X., Kaushik, P., & Ghadiyaram, D. (2025). Progressive prompt detailing for improved alignment in text-to-image generative models. *AI for Content Creation Workshop, Conference on Computer Vision and Pattern Recognition (CVPR)*. <https://arxiv.org/abs/2503.17794> (oral presentation)
7. Lehr, S. A., **Saichandran, K. S.**, Harmon-Jones, E., Vitali, N., & Banaji, M. R. (2025). Kernels of selfhood: GPT-4o shows humanlike patterns of cognitive dissonance moderated by free choice. *Proceedings of the National Academy of Sciences, USA*, 122(20), e2501823122. <https://doi.org/10.1073/pnas.2501823122>
8. **Saichandran, K. S.** (2024). A Comparative Analysis of U-Net-based models for Segmentation of Cardiac MRI. *arXiv preprint*. <https://arxiv.org/abs/2401.09980>.

TALKS & PRESENTATIONS

International Conference on Machine Learning (ICML)

Poster presentation

Vancouver, Canada

July 15th, 2025

AI for Content Creation Workshop, Computer Vision and Pattern Recognition (CVPR)

Oral & poster presentation

Nashville, TN

3rd Workshop on Generative Models for Computer Vision, CVPR

Poster presentation

June 12th, 2025

Graduate School of Arts & Sciences, Boston University

Nashville, TN

Master's Thesis Defense

June 11th, 2025

Boston, MA

Master's Thesis Defense

May 17th, 2025

TEACHING EXPERIENCE

Faculty of Computing & Data Sciences, Boston University

Teaching Assistant — DS 320: Algorithms for Data Science

Boston, MA, United States

January 2024 — April 2024

- Customized course curriculum aimed at enhancing students' competitive programming skills.
- Conducted discussions, facilitated office hours, assessed assignments, and helped with student questions online/offline.
- Designed and organized additional assignments and interactive sessions to support students.

HONORS AND ACHIEVEMENTS

Agentic AI Prize for Alzheimer's Disease Research (2025)

Selected as one of the Top 10 Finalists worldwide in the ADDI Agentic AI Prize for ADRD Research.

International Collegiate Programming Contest (ICPC) – Asia Regionals (2021)

Represented IIT Roorkee at the Asia Regional Contest.

International Collegiate Programming Contest (ICPC) – Asia Regionals (2020)

Represented IIT Roorkee at the Asia Regional Contest.

JEE Advanced 2019 (AIR 1640) – FIITJEE Award

Achieved an All India Rank 1640 among 250,000+ candidates selected from JEE Main; awarded a 100,000 INR merit prize.

JEE Main 2019 (AIR 1390)

Secured an All India Rank 1390 among 1.2M+ candidates.

KVPY Scholar 2018 (AIR 1237)

Achieved an AIR 1237 in KVPY, qualifying for India's top research institutes.

Indian National Physics Olympiad (INPhO) – 2019

Ranked top 10 in state in NSEP, and selected for INPhO.

INDUSTRY EXPERIENCE

Clairyon

AI Engineer

CA, United States

May 2025 — Present

- Built and deployed predictive diagnostic models integrated with EHR systems via FHIR on AWS with 24/7 availability, currently working with UCSD Health through Clairyon (founding team from UCSD), scaling to serve 50k+ patients.
- Contributed to a prompt-based AI agents platform with FHIR MCP tools to access EHR data, enabling 20+ specialized automation agents for clinical reports, discharge summaries, quality measures for 10+ diseases/emergencies, and clinical documentation, achieving 3x speedup and 80% accuracy in readmission risk prediction based on EHR data.
- Designed the backend for a triage app that collects and summarizes patient data pre-visit through interaction, significantly speeding up information acquisition and increasing patient inflow.

NourishedRx

AI Engineer Intern

Stanford, CT, United States

May 2024 — August 2024

- Developed and deployed 3 AI-powered applications and LLM automation workflows, including AskBetty chatbot using AWS Bedrock and RAG for personalized health insights, and LLM agents for automated querying of BigQuery and FHIR data sources, serving 1,000+ users.
- Deployed scalable backend infrastructure with AWS Lambda REST APIs and cloud monitoring, ensuring 99.9% uptime and seamless integration across systems.

- Automated Amazon Connect call transcription and summarization via AWS Bedrock LLMs, processing **500+** calls monthly and streamlining clinical documentation and patient note generation, reducing documentation time by **50%**.

Slice

Software Development Engineer Intern

Bengaluru, Karnataka, India

May 2022 — July 2022

- Designed and optimized RESTful APIs in Java Spring Boot for Juspay payment integration, developing **3+** critical endpoints for order creation, status retrieval, and payment authentication, handling **10M+** transactions monthly.
- Ensured high-throughput and low-latency performance, processing millions of transactions with **sub-100ms** response times and **99.9%** uptime.
- Collaborated with front-end, DevOps, and security teams to enhance payment reliability, reducing transaction failures by **15%** through improved error handling and retry logic, improving overall system reliability.

SELECTED PROJECTS

Zero-shot EEG classification

September 2024 — Jan 2025

Kolachalama Lab, Boston University

- Developed a zero-shot classification framework enabling inference with any new EEG channel without retraining.
- Conceptualized that trained channel embeddings lie on a manifold resembling physical scalp positions, enabling geometric interpolation.
- Introduced a training method using channel embedding interpolation for zero-shot inference, eliminating the need for channel-specific training.

Gesture Controller

February 2024 — April 2024

CS 585: Image and Video Computing

- Created a pioneering gesture-based video-game controller package for RPG, FPS, and Racing games, designing custom gestures that sync with real movements (walking, steering, striking, blocking).
- Optimized code to process movement of every body landmark and recognize custom gestures with high accuracy.
- Developed user interface to map gestures to keyboard keys, enabling seamless game control.

OPEN-SOURCE CONTRIBUTIONS

- AWS Strands Agents PR:** Contributed to a major PR that introduces new functionalities to fetch and list the prompts from MCP servers.

TECHNICAL SKILLS

- Programming Languages:** Python, C++, SQL, JavaScript, TypeScript
- Tools/Software:** Anaconda, VS Code, Git, Docker, Terminal, WandB
- AI Techniques:** QLoRA, CLIP, VLMs, RAG, RLHF, Quantization, LoRA, Attention, Agentic AI
- Full-Stack Development:** ReactJS, NodeJS, Git, Docker, Gradio, Streamlit, AWS Bedrock, GCP Vertex AI, Lambda, Amplify, ReactJS, NodeJS, Spring Boot, Kubernetes, BigQuery, FHIR, AWS, GCP, Kubernetes
- AI tech stack:** vLLM, Langchain, LlamaIndex, Pinecone, HuggingFace, MCP, unsloth, PyTorch, PyTorch Lightning, CUDA, Torch-Serve, Keras, TensorFlow, FastAI, Scikit-learn, OpenCV, Mastra