Ketan Suhaas Saichandran

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EDUCATION

Boston University   Boston, MA, USA
MS in Artificial Intelligence — **GPA: 3.96/4.00**   September 2023 — May 2025
Thesis: Active feature acquisition for efficient & transparent medical diagnoses — *Advisor: Dr. Vijaya B. Kolachalama*

Indian Institute of Technology Roorkee   Roorkee, India
B.Tech in Electrical Engineering — **CGPA: 8.65/10.00**   July 2019 — July 2023

RESEARCH EXPERIENCE

Kolachalama Lab, Boston University   Boston, MA, United States
Staff Scientist, Boston University School of Medicine—PI: Dr. Vijaya B. Kolachalama   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*.

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.

Banaji Implicit Social Cognition Lab, Harvard University   Cambridge, MA, United States
Research Assistant—PI: Prof. Mahzarin Banaji   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.

Deepti Research Group, Boston University   Boston, MA, United States
Graduate Researcher—PI: Dr. Deepti Ghadiyaram   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.

Machine Learning Lab, Electrical Engineering Department, IIT Roorkee   Roorkee, India
Undergraduate Researcher—PI: Dr. Ambalika Sharma   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. *npj Dementia* (under review). `https://www.medrxiv.org/content/early/2025/12/04/2025.12.02.25341517`
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. *ACL* (to be submitted). `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., & Kolachalama, 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) Vancouver, Canada — July 15th, 2025 — *Poster presentation*
AI4CC Workshop, CVPR Nashville, TN — June 12th, 2025 — *Oral & poster presentation*
3rd Workshop on Generative Models for Computer Vision, CVPR Nashville, TN — June 11th, 2025 — *Poster presentation*
Graduate School of Arts & Sciences, Boston University Boston, MA — May 17th, 2025 — *Master's Thesis Defense*

TEACHING EXPERIENCE

Faculty of Computing & Data Sciences, Boston University Boston, MA, United States
Teaching Assistant — DS 320: Algorithms for Data Science January 2024 — April 2024
- Customized curriculum and designed assignments to enhance students' competitive programming skills.
- Conducted discussions, facilitated office hours, assessed assignments, and supported students online/offline.

HONORS & ACHIEVEMENTS

- **Top 10 Finalist** worldwide in the Agentic AI Prize for Alzheimer's Disease Research (2025).
- Represented IIT Roorkee at the **ICPC** Asia Regional Contest (2021 & 2020).
- Achieved All **India Rank 1640** in **JEE Advanced 2019** and received the FIITJEE 100,000 INR merit award.
- Secured **All India Rank 1390** in JEE Main 2019 among 1.2M+ candidates.
- Achieved **All India Rank 1237** in KVPY 2018, qualifying for top Indian research institutes and the KVPY fellowship
- Qualified for **Indian National Physics Olympiad** (INPhO) 2019 by scoring in the **top 0.75%** nationally in NSEP.

INDUSTRY EXPERIENCE

Clairyon CA, United States
AI Engineer 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 Stanford, CT, United States
AI Engineer Intern 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 Bengaluru, Karnataka, India
Software Development Engineer Intern 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.

Open-Source Contributions: AWS Strands Agents PR (MCP server prompts functionality).
Technical Skills: Python, C++, SQL, JavaScript, TypeScript — PyTorch, TensorFlow, Keras, CUDA, vLLM, Langchain, LlamaIndex, HuggingFace, MCP — ReactJS, NodeJS, Spring Boot, Docker, Kubernetes — AWS, GCP, BigQuery, FHIR — QLoRA, RAG, RLHF, CLIP, VLMs, Agentic AI

VOLUNTEERING/EXTRA-CURRICULAR EXPERIENCE

- **Outreach Cell, IIT Roorkee** — *Member* — Oct 2020 – Oct 2021 — Led initiatives to facilitate connections between external world and IIT Roorkee's culture and ethos as part of student-led initiative under Dean of Students' Welfare.
- **Esports IITR, IIT Roorkee** — *Co-founder* — Dec 2020 – May 2023 — Co-founded and led gaming group, organized university-level events that improved visibility in national gaming communities.
- **Watch Out!, IIT Roorkee** — *Multimedia Editor* — Oct 2020 – Oct 2021 — Led multimedia production including shooting, editing, and designing media releases, and led hosting of campus events for student media body.
- **NSO, IIT Roorkee** — *Tennis Team Member* — Oct 2019 – May 2023 — Led organization of tennis competitions and represented IIT Roorkee in inter-university tournaments.
- **Music Section, IIT Roorkee** — *FOS Member* — Oct 2019 – May 2023 — Participated in and hosted multiple Friends of Section (FOS) shows as a pianist and singer.