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 track — Advisor: Dr. Vijaya Kolachalama
Indian Institute of Technology Roorkee — Roorkee, India
B.Tech in Electrical Engineering — **CGPA: 8.65/10.00** — July 2019 — May 2023

RESEARCH EXPERIENCE

Kolachalama Lab, Boston University — Boston, MA, United States
Research Staff — June 2025 — Present

- Designed and developed a **vision-language model** for neuropathology images.
- Implemented AFA on clinical **LLMs** to advance AI-augmented interactive medical diagnoses.
- Contributed to a large-scale **multimodal medical LLM** project by processing large-scale medical data and LLM post-training.

Graduate Researcher — September 2023 — May 2025

- Introduced a **state-of-the-art** active feature acquisition (AFA) framework, achieving **1-10%** performance improvement.
- Developed a novel non-greedy method for AFA by utilizing expected SARSA and CMI-based rewards, improving performance by **2-3%**.
- Designed a **zero-shot classification** framework for EEG channels and introduced a novel training strategy.
- Contributed to a large-scale **multimodal medical LLM** project by processing large-scale medical data and LLM post-training.

Deepti Research Group, Boston University — Boston, MA, United States
Research Collaborator — Sept 2024 — May 2025

- Introduced a novel method, **SCoPE**, to **enhance alignment** in **diffusion models** for complex prompts.
- Performed several experiments to prove the effectiveness of SCoPE against **stable-diffusion**, **improving on 83%** of samples.
- Inspired by human artistic processes, created a schedule for text conditioning to interpolate between coarse-to-fine prompt embeddings.
- Developed mathematical methods for scheduling the interpolation on the CLIP hypersphere.

Banaji Implicit Social Cognition Lab, Harvard University — Cambridge, MA, United States
Research Assistant — May 2024 — May 2025

- Discovered humanlike cognitive patterns in **LLMs** and explored cognition models to enhance **LLM humanlikeness**.
- Developed **automated pipelines** for **multi-turn batch-processing** on LLMs for research experiments.
- Founded SHASM (The Science of Human and Artificial Social Minds) as a researcher.

INDUSTRY EXPERIENCE

Clairyon — CA, United States
AI Engineer — May 2025 — Present

- Built and deployed Model Context Protocol (MCP) servers at scale for hospitals.
- Developed agentic AI systems on the cloud for automating clinical workflows.

NourishedRx — Stanford, CT, United States
AI Engineer Intern — May 2024 — August 2024

- Developed and deployed Generative AI applications to enhance user experience and internal efficiency, including automation workflows.
- Built and deployed AI solutions, such as *AskBetty*, an AI chatbot using AWS Bedrock and ReactJS on AWS Amplify, leveraging **RAG** for personalized health recommendations, and **LLM agents** to query BigQuery and Google FHIR, automating data retrieval and summarization.
- Designed and integrated APIs using AWS Lambda, and implemented pipelines to transcribe and summarize Amazon Connect call recordings via Amazon Transcribe and AWS Bedrock LLMs, streamlining documentation and patient note generation.

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, enabling high-throughput, low-latency transactions with endpoints for order creation, status retrieval, and payment authentication.
- Collaborated with front-end, DevOps, and security teams to enhance payment reliability, reducing transaction failures by 15% through improved error handling and retry logic.

SELECTED PUBLICATIONS

1. **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)
2. 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

3. 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`

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 submission).

5. Singla, P., Singh, A., Garg, S., Garg, I., & **Saichandran, K. S.** (2025). Are LLMs aware of what they learn and think? *EMNLP* (under submission).

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 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

- **Optiver - Trading at the Close (Kaggle competition) - 2024**
  Received a bronze medal.
- **International Collegiate Programming Contest (ICPC) - 2022**
  Represented IIT Roorkee at Asia Regionals.
- **International Collegiate Programming Contest (ICPC) - 2021**
  Represented IIT Roorkee at Asia Regionals.
- **JEE ADVANCED 2019 (AIR 1640) − FIITJEE AWARD**
  Secured an All India Rank of 1640 out of more than 250,000 students selected from JEE MAIN, and received a cash prize of 100,000 INR.
- **JEE MAIN 2019 (AIR 1390)**
  Secured an All India Rank of 1390 out of more than 1 million students.
- **KVPY Scholar-2019 (AIR 1237)**
  Secured an All India Rank of 1237 in the KVPY exam.
- **Indian National Physics Olympiad-2019**
  Cleared the NSEP exam with a state rank of 7 and competed in the INPhO.

PROJECTS

Zero-shot EEG classification September 2024 — Jan 2025
Kolachalama Lab, Boston University

- Developed a framework that can zero-shot classify with any new EEG channel during inference.
- Conceptualized that trained channel embeddings lie on a manifold resembling physical positions on the scalp.
- Introduced a training method by interpolating between channel embeddings for zero-shot inference with new EEG channels.

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.
- Optimized the code heavily to consider the movement of every landmark on the body and process the custom gestures.
- Designed gestures that sync with real movements - Walking on the spot, holding the steering wheel, striking and blocking.
- Developed a user-interface to map gestures to keys on the keyboard.

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, TorchServe, Keras, TensorFlow, FastAI, Scikit-learn, OpenCV, Mastra