

KAOUSHEIK JAYAKUMAR

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College Park, Maryland - 20740

Education

University of Maryland, College Park

August 2025

Master of Science in Computer Science

Indian Institute of Technology Madras

2018 – 2023

Dual Degree (B.Tech + M.Tech) in Electrical Engineering, Minor in Artificial Intelligence

CGPA - 8.59/10

Engineering Experience

Oracle

Bangalore, Karnataka

Member of Technical Staff

July 2023 – Aug 2025

- Integrated edge computing solutions into Oracle Cloud Infrastructure (OCI), unifying architectural components to optimize efficiency, reduce latency, and enhance overall system performance across cloud environments.
- Engineered and executed a large-scale OS upgrade to Oracle Linux 8, ensuring cross-compatibility of dependent components, libraries, and middleware and improved stability of rack-mounted infrastructure.
- Engineered a solution to partition large ISO images into smaller chunks for parallelized security scanning, integrating it back into the infrastructure while ensuring compatibility with existing components, storage, and network pipelines.

Oracle

Bangalore, Karnataka

Product development Intern

May 2022 – July 2022

- Optimized Docker images by implementing multi-stage builds and minimizing layers, reducing image size and improving deployment speed and runtime efficiency.
- Developed an automated CICD pipeline system that integrated multiple components to generate RPMs and ISO builds

Saptang Labs

Chennai, Tamil Nadu

Software and Cybersecurity Intern

Jun 2021 – Jul 2021

- Developed an internal tool use which detects vulnerabilities on open ports of any ASN / Organization
- Enhanced machine learning algorithms that were automated into cyber-security solutions for detecting anomalies

Prescribe

Remote

Founding Engineer Intern

Oct 2020 – Dec 2020

- Architected a WebRTC-based communication pipeline and platform that enabled secure online medical consultations for patients during the COVID-19 pandemic.
- Integrated AI-powered WhatsApp based teleconsultation workflow for medical practitioners, enabling seamless patient onboarding, video consultation scheduling, prescription generation, and real-time OPD queue management—all without requiring patients to install any app.
- Collaborated with 5+ medical institutes in South India to integrate patient medical history management to streamline and improve continued consultancy.

Bluepad

Remote

Software Engineering Intern

Dec 2019 – Jan 2020

- Designed and developed cross-platform applications that allows users to blog contents in regional languages.
- Implemented an recommendation system based on user preferences and history filtered based on the genre and language.

Publications

Sparks of Cooperative Reasoning: LLMs as Strategic Hanabi Agents

Under review at ICLR

Mahesh Ramesh, Aswinkumar Ramkumar, Pavan Thodima, Kaousheik Jayakumar

2026

Are LLMs Generalist Hanabi Agents ?

ICML, ICCV, Neurips * 3

Mahesh Ramesh, Aswinkumar Ramkumar, Pavan Thodima, Kaousheik Jayakumar

2025

The Tag-Team Approach: Multilingual ASR

Interspeech

Kaousheik Jayakumar, Vrunda Sukhadia, A Arunkumar, S Umesh

Dublin, 2023

Projects and Research Experience

Analysing the modality bias in OMNI models | *Research Assistant, Gamma Lab* **August 2025 – present**

- Applied chain-of-thought prompting to evaluate and quantify modality bias in an ONMI multimodal model.
- Benchmarked multiple OMNI models on language understanding tasks by steering them to leverage all available modalities provided during inference using logit lens analysis
- Mitigated modality bias by deploying probing techniques and steering vectors at each inference step to dynamically regulate cross-modal attention and prevent dominance of a single modality.

Analysing the coordination among multi-AI agents through Hanabi | *CVPR* **March 2025 - present**

- Conducted the largest evaluation of 17 state-of-the-art LLMs as cooperative Hanabi-playing agents, analyzing performance in 2–5 player multi-agent settings under both minimal and context-rich prompting strategies.
- Developed and tested context-engineered prompts (MinCon and DeductCon) to scaffold Bayesian reasoning and strategic card deductions, revealing prompt-dependent gameplay strategies and multi-agent coordination limitations.
- Released comprehensive datasets including 1,520 full game logs and 560 games with dense move-level value annotations to support instruction tuning and Reinforcement Learning from AI Feedback (RLAIF) in cooperative multi-agent environments. Paper accepted at Neurips Mutli-turn Intelligence workshop 2025

Enhancing ASR systems for low-resource languages | *Dual Degree Thesis, IIT Madras* **Jul 2022 – May 2023**

- Exploited phonemic similarities among various Indian languages and enhanced the performance of multilingual ASR systems for 10 low-resource languages, reducing WER by 2-15% over the corresponding monolingual baselines
- Analysed the effect of introducing language ID as an additional learning task which showed further 2-5% improvement

National Language Translation Mission | *Bhashini, Govt. of India* **July 2022 - May 2023**

- Developed multilingual Speech systems (ASR, Speech Translation, Synthesis) across multiple Indian languages
- Curated 4000 hours of labelled data from NPTEL lectures for low-resource Indian languages by audio-text alignment
- Deployed real-time code-switched streaming models for ASR. Worked on video-video lip-syncing for NPTEL lectures

Practical Deep learning with Bayesian principles | *Course Project* **Dec 2020 – Mar 2021**

- Used Bayesian Principles like **Variational Inference** to train neural networks to get better uncertainty estimates
- Implemented **Active Learning** on non-linear 2-D datasets, MNIST and CIFAR 10 using VOGN (Bayesian algorithm)
- Analysis showed that VOGN performed better compared to Adam with 6% improvement while using 50% fewer params

Liver Tumor Segmentation | *Course project* **May 2019 – July 2019**

- Enhanced liver regions in LITS 2017 CT scans using thresholding, contrast enhancement, noise reduction, and normalization for clear separation of liver and tumors.
- Developed a ResUNet model for pixel-wise segmentation, outperforming Liver Tumor Segmentation Benchmark by 5%.

Bridge - Multiplayer Co-op Card Game **Dec 2020**

- Developed a real-time multiplayer application for the classic card game Bridge using React, NodeJs and Socket.IO

Technical Stack

Languages: Python, C++, JavaScript, TypeScript, SQL

Libraries and Frameworks: PyTorch, Numpy, Pandas, NodeJS, React, Angular, React Native, Flutter, GraphQL

Databases: Postgres, MySQL, MongoDB

Softwares and Toolkits: Git, Linux, Shell / Bash scripting, Docker, Kubernetes, LaTeX, ESPNet, Fairseq

Relevant Coursework: Multimodal Foundational Models, Natural Language Processing, Probability, Linear Algebra, Data Structures and Algorithms, Estimation Theory, Multi-Arm Bandits, Database Systems, Computer Organization

Leadership Experience

Web-Operations Head | *Shaastra 2021 (1st online-tech fest in India)* **Apr 2020 – Mar 2021**

- Led a team of 10 student developers in handling the background operations in the first-ever online edition
- Built a portal that virtually renders iconic places and buildings of the campus to provide a real-life experience
- Developed a unified background platform that monitors user registrations and payments using Typescript and GraphQL
- Conducted workshops on Python, React and NodeJS for college students in South India as part of the Shaastra publicity

Team Lead, Network Security Hackathon | *9th Inter IIT Tech Meet* **June 2020**

- Led a team of 4 developers to represent our university at a 2 day hackathon. Secured a silver medal finish
- Simulated environments to replicate the vulnerabilities and developed PoC exploits for different CVE
- Used Docker, Apache Kafka and Nginx to decipher the vulnerabilities in the simulated environment

Miscellaneous

Teaching Assistant - Signals and Systems, IIT Madras

Jan 2023 – May 2023

Teaching Assistant - Digital Signal Processing, IIT Madras

July 2022 – Nov 2022

ICPC Regionalist secured 120/721 teams in the Asia Amruthapuri regionals

Sept 2020