Tharun Kumar Tiruppali Kalidoss

Junior at Princeton University
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Education

Princeton University
B.S.E. Computer Science
Aug 2022 - May 2026

Relevant Courses: Theory of Algorithms w/ Dr. Robert Tarjan, Distributed Systems, Real Analysis, Algebra, Stochastic Systems, Reinforcement Learning, Economics in Computing, Intro ML, Data Structures and Algorithms, Discrete Math, Linear Algebra.

Technical Skills

React, Python, Typescript, Javascript, Java, C++, SQL and NoSQL Databases, Pytorch, JAX, TensorFlow, Azure, AWS, Ray, SwiftUI, UIKit, Mobile Development, Full-stack Development, Swift, Machine Learning, CI/CD, Flask, Solidity, Test Automation, Selenium, Kubernetes

Relevant Experience

Member of Technical Staff —— UniversalAGI, San Francisco, CA **Jan 2025 – Apr 2025**

- Built AI solutions for Fortune 500 companies and governments, working closely with the founder and CEO, Ameer Haj-Ali.
- Developed a **state-of-the-art Text-to-SQL LLM agent** achieving **high accuracy on Spider 1.0 benchmark**; successfully deployed the solution **on-premise for the UAE government** w/ Kubernetes on private employee data.
- Enhanced 3D Gaussian Splatting by adding a Stable Video Diffusion layer to the optimization process to significantly reduce artifacts in novel camera views for sparse input scenarios. Developed 3D reasoning skill using data generated from this process.
- Developed an LLM agent for Apple that builds no-code applications w/ data integrations to external services (e.g. Slack, Gmail).

Research Engineer —— Hooglee, San Francisco, CA **May 2024 – Dec 2024**

- Worked with **Sebastian Thrun, and Bichen Wu** to incubate a funded consumer video generation startup.
- Engineered synthetic media generation system utilizing wav2lip fine-tuning for audio-driven animation, FLAME 3D facial model integration, and MediaPipe pose estimation, deployed on iOS with Metal acceleration (trystorm.app).
- Developed automated video editing algorithm combining CLIP-based scene detection, optical flow prediction, and content-aware frame interpolation for intelligent clip assembly, optimized with Swift concurrency for on-device performance (memorie.app).
- Developed parameter-efficient LoRA training pipeline on distributed H100 infrastructure for personalized image generation models, creating a cloud-based API pipeline for real-time image synthesis in social media applications

Software Engineering Lead —— Nora Music, Contract, Remote **Aug 2023 – Mar 2024**

- Developed a state-of-the-art webcrawler with Selenium with GPT data-cleaning pipeline. Fully automated in AWS EC2.
- Invented a proprietary encryption system and ML-based audio fingerprinting strategy to prevent song/audio piracy.
- Leveraged NextJS, AWS S3, MySQL, and AWS Lambda to develop full-stack audio exploration web app. Recruited and led a small team of engineers to develop an API service and data infrastructure for seamless data piping from clients.

Software Engineering Internship —— RescaleMed, Contract, Remote **Jun 2023 – Aug 2023**

- Led development of full-stack mobile cross-platform chatbot application. Built using React Native, Typescript, AWS Cloud, MongoDB Serverless functions. Application is available on the iOS app store as “Tibb”.
- Utilized CI/CD protocol with an agile application delivery pipeline to active testers during development.
- Trained proprietary GPT-based LLM optimized for client-facing mental health aid. Encrypted data compliant with GDPR.
- Designed and built scalable NoSQL database architecture with optimized retrieval/insertion. Automated testing using Jest, Selenium, and unit tests.

Projects

Multi-Modal Comic-to-Animation Engine **Mar 2024**

- Built an end-to-end manhwa-to-anime generation engine using multi-modal agents, Stable Diffusion in-painting, and stable video diffusion with automated lip-syncing and ElevenLabs voice synthesis
- Worked with comic creators with 200k+ readers, landed two animation companies as clients, and got YC interview for this project. (Demo: https://www.youtube.com/watch?v=_Hb_hQ3CVrM)

RL-based Obstacle Avoidance for Drone Swarms **Jul 2024**

- Formulated obstacle avoidance problem as an MDP, and trained a CNN via PPO to teach drones in a swarm to navigate various environments while maintaining swarm formation, used OpenAI gym environment. Won Project Eagle hackathon at AGI House.

Award-winning GPT-based Arcade Wagering Platform built on Ethereum **Mar 2023**

- Collaborated with small engineering team to develop wagering platform for web-based arcade games using React, Flask, Firebase, Solidity, Arbitrum. Smart contracts built on the Arbitrum test-net. (github.com/tharunkumartk/cadia)
- Won a total of $25,000 in prize money, winning Princeton Pitch, Princeton’s DeSo Hackathon, and LionHack.