Tejas Vipin

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Contact

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Skills

C\C++, Python, Tensorflow, Pytorch, Linux, Device Drivers, Compilers, Embedded Systems, Machine Learning, Operating Systems, LLMs, AWS, Transformers, Git

Experience

Calligo Technologies May. 2025 - Present

Software Intern

- Working on Linux device drivers for Posit based hardware accelerators.
- Researched PCIe driver specification to enable high speed DMA between host and device.

Intel Corporation Feb. 2025 - Apr. 2025

Student Trainee

- Worked on Visual Search using VLM under the Intel Unnati program.
- Researched various VLM capabilities to generate image and text embeddings for large datasets.
- Collaborated with mentors and team members to create a Gradio workflow integrating FAISS to index search results.

LLVM Jan. 2025 - Present

Contributor to MLIR, Libc

- LLVM is a modular, open-source compiler framework designed to optimize and generate intermediate and machine-level code for a wide range of programming languages and architectures.
- Optimized MLIR generation for operations involving 0 dimensional vectors. Optimized and worked on unit test architecture involving the same.
- Implemented higher order math functions like asinh and hypot for Float16 in libc and wrote exhaustive tests for them.
- Profiled different function implementations and identified performance bottlenecks and removed them.

Research

Converting pretrained LLMs to Titans using neural memory modules

Primary author - Presented at ICCCNT, IIT Indore

- Extended context window of pretrained LLMs without dramatically increasing the compute power required using Long Term Memory modules as introduced by Google's Titans architecture.

Projects

AI Mathematical Olympiad Progress Prize 2 Competition

* Participated in a Kaggle competition involving create algorithms and models that can solve olympiad level math problems written in LaTeX format.
* Used cutting edge finetuning techniques to boost the performance of SLMs using CoT and TIR to be competitive with state of the art LLMs with 10x the number of parameters.
* Deployed state of the art LMs using vLLM and optimized sampling parameters to optimize GPU usage and speed up inference.

Jane Street Real Time Market Data Forecasting Competition

* Participated in a Kaggle competition involving prediction of the performance of high frequency trading algorithms used by Jane Street for Quantitative Trading.
* Came up with several different strategies of data processing and prediction to increase accuracy and speed.

Crime Detection and Classification using Deep Learning

* Detected and classified different classes of crime using RNNs and Transformers.
* Came up with several different novel strategies of analyzing video data to increase inference speed and accuracy.
* Finalized and contrasted different competing cutting edge models to come up with a final model that outperforms all current existing models for this task.

Education

SRM Institute of Science and Technology Kattankulathur, India

B Tech Computer Science and Engineering with Specialization in Cloud Computing *2022 - 2026*