Naveen T.K

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Education

Sathyabama Instituite Of Science and Technology **Chennai, India**
Bachelor of Technology in Information Technology— GPA: 6.9/10.0 *Expected: April 2026*

Coursework: Distributed Systems, Machine Learning, Deep Learning, Computer Architecture, High Performance Computing

Technical Skills

Languages: Python, C++, CUDA, Bash, SQL

ML Frameworks: PyTorch, JAX, TensorFlow, Hugging Face Transformers

Systems & Tools: Kubernetes, Docker, Ray, Git, CI/CD, Prometheus, Grafana, Weights & Biases

Specializations: RLHF, Distributed Training (DDP, FSDP), Performance Profiling, Model Fine-tuning

Technical Projects

Distributed LLM Training Framework **January 2024 – March 2024**
Personal Project

- Built PyTorch-based distributed training system for fine-tuning LLMs across multiple GPUs using FSDP and gradient checkpointing, achieving 2.7x speedup over baseline implementations
- Implemented mixed precision training and ZeRO optimization to reduce memory footprint by 60%, enabling training of larger models on limited hardware
- Created profiling instrumentation using PyTorch Profiler to identify and eliminate bottlenecks in data loading and gradient synchronization

RLHF Implementation for Language Model Alignment **September 2024 – December 2024**
Academic/Research Project

- Implemented complete RLHF pipeline including reward model training, PPO algorithm, and KL divergence penalties for model alignment
- Optimized training stability through value function clipping, advantage normalization, and adaptive KL coefficient scheduling
- Developed comprehensive logging and monitoring system using Weights & Biases to track training metrics and GPU utilization in real-time

High-Performance ML Training Pipeline **February 2025 – March 2025**
Personal Project

- Designed Kubernetes-based ML training infrastructure with automated job scheduling, resource allocation, and fault tolerance
- Implemented continuous testing system that automatically validates training pipelines in isolated environments, reducing production incidents by 85%
- Built custom Python profiler to detect and resolve GIL contention issues, improving training throughput by 40%

Model Architecture Adaptation Framework **April 2025 – August 2025**
Open Source Contribution

- Developed flexible framework to adapt training code across different transformer architectures (GPT, LLaMA, Mistral) with minimal code changes
- Implemented architecture-agnostic gradient accumulation and checkpoint management with comprehensive test suite

Leadership & Contributions

Organiser - Hackathon **October 2024**
Sathyabama Institute of Science and Technology

- helped in organising an hackathon competition in my department

ML Research Study Group Lead **Mon – Present**
Discord AI Club

- Lead weekly paper reading sessions on LLM training, RLHF, and organized hands-on workshops on PyTorch optimization and distributed training