

HariHara Vardhan K

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Education

BMSCE, ISE

2023 - 2027

- GPA: 9.0/10.0
- **Relevant Coursework:** AI and Machine Learning, Operating Systems, Computer Networks, Distributed Systems, Cloud Computing.

Technical Skills

- **Languages:** Python, JavaScript, C++, C, Java, MySQL
- **Web Dev:** Flask, Django, REST API Design, React.js, HTML5, Tailwind CSS
- **Version Control:** Git, GitHub, Git-based workflows
- **AI & ML:** Machine Learning, NLP, AI Automation (n8n)

Experience

Google Summer Of Code'26 – Git based Backend

May 2026 – Present

Sugar Labs (Music Blocks)

- Designed and implemented a **Git-based backend system** to migrate **10,000+ user projects** from MySQL to GitHub, enabling persistent version history and ownership.
- Built a **streaming migration pipeline** processing projects in **<5 seconds per project**, using in-memory transformation and resumable checkpointing for fault tolerance.
- Engineered a scalable backend architecture using **SQLite + REST APIs**, reducing data access latency from **200ms (GitHub API) to <1ms** for search and retrieval.
- Optimized system design to handle **GitHub API constraints (5,000 req/hr)** by offloading reads to SQLite, enabling efficient browsing and search across **10K+ repositories**.
- Implemented **deduplication using SHA-256 hashing**, eliminating redundant storage and improving migration efficiency.
- Developed **7+ production-grade API endpoints** (search, browse, like, publish), ensuring feature parity with legacy systems.

CPP Intern – Quantum Computing

Feb 2026 – Present

Hewlett Packard Enterprise (HPE)

- Designed a **quantum-assisted scheduling engine** using **RQAOA** to optimize task placement across heterogeneous memory tiers (DRAM vs CXL).
- Formulated scheduling as a **QUBO optimization problem**, modeling memory latency (80–400ns) and capacity constraints for optimal task allocation.
- Built a hybrid system integrating **Qiskit, OpenQAOA, and classical solvers**, enabling recursive problem reduction for combinatorial scheduling.
- Simulated **CXL-like memory architectures using NUMA**, implementing controlled memory binding with **numactl** for realistic performance evaluation.
- Developed an end-to-end pipeline (optimization → scheduling → execution), improving scheduling efficiency under heterogeneous memory conditions.
- Evaluated system performance using metrics such as **latency, throughput, and task completion time** across multi-tier memory systems.

Projects

Curia – AI | React, Express, LLM, Flask

github

- Engineered a full-stack meeting summarizer by developing a **Flask and React.js** application, integrated with a custom LLM. Designed and implemented a **RESTful API** for seamless frontend-backend communication, reducing manual documentation by 60%.
- **Integrated with Jira for automated task creation and assignment**, streamlining project workflows and improving team productivity by 40%.

MakeMore – AI | Neural Networks, NLP

github

- Developed **MakeMore**, an AI name generator using **PyTorch** and **Neural Networks** for character-level language modeling.
- Trained the model on curated name datasets, achieving **over 90% character-sequence accuracy** and generating realistic, original names.
- Enhanced name generation precision by applying **NLP techniques** and fine-tuning the model's architecture for improved performance.

Lucy – AI | React, Gemini, Flask

github | website

- Built an interactive AI chatbot platform to improve engagement by integrating features like **AI-generated avatars** (Tiny-Cats), **collaborative sketching** (Co-Drawing), and **location-based exploration** (Map Explorer).
- Achieved seamless AI interaction by leveraging **Gemini AI** with a React frontend and Flask backend.

Chat Web App | Flask

github | website

- Architected a **scalable backend** for a real-time chat service using **Flask and Socket.IO**. Optimized the event-driven messaging pipeline, reducing message latency by over 80% and ensuring high **reliability** and **performance** for concurrent users.
- **Reduced message latency by over 80%** by integrating Flask with **Socket.IO** for efficient event-driven message handling using JavaScript.

Certifications and Experiences

GeeksforGeeks Technical Core, Student Chapter – Led tech events and conducted technical webinars.

Harvard's Cs50 Built a strong foundation in programming fundamentals and problem-solving.