Hrishikesh Deshpande

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Education

University of Illinois Urbana-Champaign — Urbana-Champaign, Illinois
B.S. Computer Engineering, Grainger College of Engineering — *August 2023 - December 2026*

Relevant Coursework: Operating Systems Design, Computer Architecture, Applied Parallel Programming, Machine Learning Applications, Algorithms & Models of Computation, Data Structures, Networks & Distributed Systems

Technical Skills

Languages: Python, C, C++, Dart, Java, RISC-V Assembly, JavaScript
Tools & Frameworks: Git, GDB, Firebase, Flutter, React, CUDA, Selenium, Xcode, HTTP
Systems & Hardware: Verilog, Arduino, Intel Quartus, Vivado, Autodesk Fusion 360

Experience

Swaram – Founder & Developer — Aug. 2024 – Present
Indian Classical Music Note-Taking App — *Urbana-Champaign, Illinois*

- Developed and launched a cross-platform mobile app using Flutter/Dart, available on both iOS and Android, with 100+ downloads across North America, Europe, and Asia.
- Designed and implemented custom keyboards with optimized layouts, improving the efficiency of complex music notation input by 40% compared to conventional input methods.
- Leveraged Firebase for real-time data synchronization and secure cloud storage, reducing data inconsistencies by 30% and ensuring near-instant updates across devices.
- Maintained a growing base of 50+ active users and collected feedback to release regular updates, enhancing user satisfaction and app engagement.

Projects

RISC-V Operating System | *C, RISC-V Assembly, GBD* — Jan. 2025 – Present

- Built a Unix-style kernel from scratch for RISC-V, supporting ELF loading, dynamic user stack construction, argument passing, and seamless transition between supervisor and user mode.
- Programmed a VirtIO block device driver with descriptor-based I/O, interrupt-driven completions, and reusable queues; implemented reset and locking logic to ensure correctness under concurrency.
- Implemented virtual memory drivers with Sv39 page tables, enabling per-process memory isolation, page-level protection, and separation of user and kernel memory space.
- Designed and tested a preemptive multithreading system with support for thread creation and joining, stack allocation, context switching, and safe trapframe management.
- Developed a custom writable filesystem supporting file creation, deletion, hierarchical directories, block allocation via a bitmap, and a page-cache-based dirty tracking mechanism for persistence to disk.
- Built a minimal user-mode shell with argument parsing, file interaction, and support for concurrent processes via custom syscalls and inter-process pipes; ensured proper EOF and non-blocking behavior.

Stock Market Prediction Bot | *Python, Machine Learning, LSTM, Transformers (BERT)* — Nov. 2024 – Present

- Developed a Python-based stock prediction bot that forecasts future prices using LSTM models trained on 5+ years of historical stock market data from the yFinance API.
- Implemented a web scraping pipeline with BeautifulSoup to extract financial news and earnings reports from major outlets for real-time data ingestion.
- Applied BERT-based sentiment analysis using Hugging Face Transformers to analyze news contextually, improving sentiment classification accuracy compared to traditional NLP approaches.
- Engineered a feature extraction pipeline, embedding sentiment scores into the LSTM model to refine predictions, leading to a 20% improvement in accuracy over price-only models.
- Deployed the bot for personal trading, achieving an 8.5% portfolio return over three months through sentiment-informed decision-making.