Nathanial Hapeman

Senior Software Engineer

Los Angeles, CA

nhapeman@gmail.com
Portfolio: nhapeman.com
linkedin.com/in/nhapeman
github.com/nate-h

Summary

Senior Software Engineer with 11 years of experience building performance-critical systems across hardware testing, machine learning, and geospatial domains, with experience leading fullstack projects.

Skills

Frontend: JavaScript, Vue, React, Angular, TypeScript, CSS, Sass, HTML, UI/UX,
Backend: Python, FastAPI, Flask, OpenCV, NumPy, Pandas, Plotly, Matplotlib, PostgreSQL, Docker
Others: C++, Testing, Debugging, CI/CD, Profiling, OOP, SQL, Git, AWS, Paquet, HDF5, Issue Tracking

Work Experience

HRL **July 2021 – Present**
Staff Fullstack Engineer *Malibu, CA*

- Lead developer and architect on python-based automated semiconductor device testing framework
  - Doubled testing throughput via optimized instrument usage and minimal code overhead
  - Support for multiple hardware configurations with parallel orchestration capabilities
  - Built hardware abstraction layer with instrument mocking for CI/CD and rapid development cycles
  - Created comprehensive demos and simulations to accelerate operator onboarding and proficiency
  - Worked cross-functionally with physicists to build analysis tools in Python, validate experimental results, qualify hardware systems, and architect test configurations
- Fullstack developer on real-time data acquisition and visualization platforms for quantum-relevant data
  - Developed interactive JavaScript canvas applications for complex multi-dimensional data exploration
  - Created data pipelines handling large-scale sensor telemetry with HDF5 and SQL backends
  - Implemented real-time plotting and analysis tools using Plotly, WebSockets, Vue, and IPC
- Recipient of 2024 HRL Award for Work Excellence on Critical Programs

Applied Invention **June 2014 – June 2021**
Senior Software Engineer *Burbank, CA*

- Computer Vision Aquaculture Project
  - Lead architect and developer on image annotation website using Angular, Flask, Postres, AWS
  - Worked extensively with annotation team to improve the website user experience
  - Imported and cleaned training data from third party sources
  - Built dashboard to monitor and control image pipeline, track annotator performance, inspect anomalies
  - Developed multiple computer vision solutions like multi-label recognition, quality filtering, image scoring
  - Worked on machine learning data pipeline using Pachyderm, AWS, Kubernetes
- Rental Forecasting Project
  - Added to team to resolve performance bottlenecks and expand forecasting system to nationwide scope
  - Achieved 50x speedup through query optimization, parallelization, memoization, NumPy vectorization, and performance profiling
  - Automated model accuracy checks and used slack bots to report discrepancies and result summaries
- Geospatial Simulation Development
  - Worked on several GIS projects using Cesium.js, UE4 based and C++ in-house engines
  - Wrote entire file system diagnostics website for a map server
  - Added support for dynamic terrain layer switching and wrote custom shaders
  - Built hotkey systems, scenario planning tools, time sliders, dynamic camera systems

Projects

Super Mario Brothers Engine (c/c++ and SDL) - https://youtu.be/EMslyjWlPGo
MyTunes: A Java media player - https://youtu.be/1c4erMvMnVQ
Other projects on my GitHub: github.com/nate-h

- Drone-C2 – Mock drone tracking application using React, TypeScript, React-Leaflet, Go, PostgreSQL, Docker
- Whirling – An AI driven music visualizer written with Python, OpenGL, NumPy, Librosa and Spleeter
- fun-with-react – A collection of small react.js projects using TypeScript, Sass, clsx
- Image-Effects – Dozens of image processing exercises using OpenCV and NumPy
- nhapeman_v5 – 5th iteration of my portfolio website using React, Next.js, Tailwind CSS, and TypeScript
- Pacman_js & Minesweeper_js – Recreated basics of both games in pure JavaScript
- Completed all 5 Google FooBar problems – solutions are in a private repo

Education

University of California, Riverside **September 2008 – December 2013**
Bachelor of Science, Mechanical Engineering
Minor in Computer Science