Nathanial Hapeman

Senior Software Engineer

Los Angeles, CA

(626) 475-6283
github.com/nate-h
nhapeman@gmail.com
Portfolio: nhapeman.com

Education

University of California, Riverside **Sept 2008 - Dec 2013**

- Bachelor of Science, Mechanical Engineering GPA 3.14
- Minor, Computer Science GPA 3.63

Professional Experience

Applied Invention – Full Stack, GIS, Data Science and Machine Learning **June 2014-Present**

Computer Vision Aquaculture Project:

- Wrote entire frontend for an image annotating website and a good portion of the backend
- Worked extensively with annotation team to improve the website user experience
- Imported training data from third party sources and fixed failed data migrations
- Built dashboard to monitor the annotation data pipeline and annotator stats
- Wrote numerous SQL queries to provide data insights and highlight potential biases
- Worked on several computer vision solutions, one of which prevented a human annotation step
- Helped build a Pachyderm data pipeline that turned raw images into machine annotations
- Tech used: Angular.js, PostGreSQL, Flask, Python, Sass, JavaScript, OpenCV, Pachyderm

Rental Forecasting Project:

- Identified bottlenecks in a Python based rental forecasting program and made it 50x faster
- Optimizing involved rewriting queries, parallelizing, memoizing, NumPy and lots of break points
- Automated evaluating the forecasts and relayed that info using Slack bots among other things
- Systematically evaluated different forecasting models for various input parameters
- Helped with the frontend of a website that managed Rental distribution
- Tech used: Python, NumPy, AWS, Angular, TypeScript, CSS

GIS and Game Development:

- Worked on an in-house c++ geospatial game engine used for simulations
- Wrote entire file system diagnostics website for mapserver
- Modified the mapserver and game engine to support new terrain layers and allow dynamic switching
- Built a hotkey menu system that allows users to customize and define new hotkeys
- Added numerous algorithms like semi-realistic radar detection or 3D network visualization
- Adding an eye tracking system to engine and implemented Kalman filter to smooth user eye data
- Developed data ingestion mechanisms for real and simulated data
- Explored Unreal Engine for GIS and compared it with a web based Cesium.js approach
- Tech used: c/c++, OOP, JavaScript, Unreal Engine, Cesium.js, Panda3D, math

FrackOptima – Full Stack, Python Qt Developer **May 2016-October 2017**

- Wrote, test, and debugged code for Fracking application built using Python and Pyside
- Added small features to company website that uses AWS, Flask, CSS, jQuery, Jinja2

Personal Projects

Whirling - An AI Driven Music Visualizer (Python, OpenGL, NumPy, Librosa, Spleeter)

- Uses audio feature extraction and audio segmentation to parse and understand music
- Heavily optimized to run at 60fps in python by using NumPy and OpenGL
- Useful debug features like visualizing audio features and spectrograms

Super Mario Brothers Engine (c/c++ and SDL)

- Capable of loading, saving, running 60 FPS, changing audio effects
- Uses OO programming, containers, memory management, and threading

Desktop Music Player (Java and JavaZoom)

- Designed like iTunes but optimized for playlist management
- Uses multithread synchronization, object serialization, regex filters, swing components

Numerous 3D and 2D projects (Matlab)

- Awarded top in class for creating a racecar simulation that had drifting, flips, burnouts, etc.
- Wrote OCR software capable of identifying the letters written in a simple picture
- Developed other models to simulate wind, gravity, jet propulsion, N-body experiments

Other projects you can find on my GitHub

- nhapeman_v3 – Third iteration of personal portfolio website written in Vue.js with Sass
- Jot – Terminal based markdown note taking helper with device synchronization
- Pixel Chaser – An image drawer using image processing to drive a DFS based drawer
- Last Stand – A multi-directional shooter developed for iOS for a 48 hour hackathon
- Tblr – A set of CSS classes for rapidly positioning HTML elements
- Pacman_js – Recreated basics of Pac-Man in pure JavaScript
- Minesweeper_js – Recreated basics of minesweeper in pure JavaScript
- Dotfiles – My dotfiles across all Linux based computers I own
- Completed all 5 Google FooBar problems – solutions are in a private repo to respect Google's wishes
- JigsawPuzzleSolver – For my latest project, I'll be attempting to build a CV jigsaw puzzle solver... WIP ;)