(626) 475-6283 **Nathanial Hapeman** Los Angeles, CA
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## 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 and Geospatial Development** *June 2014-Present*

**Full Stack Development for computer vision project:**

Wrote the entire frontend for an in-house machine learning training data generation website
Operates on large images and includes custom canvas zooming and annotation tools
Includes dashboard to view data pipeline and user performance stats
Worked extensively with end-users to improve the website user experience
Rewrote a sizable portion of the backend to improve performance and ease of development
Imported training data from third party sources and fixed failed data migrations

**Geospatial Game Engine 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 to 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

**FrackOptima, Part-time Full Stack/ Python 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 per segmentation

**Web Development (Angular, Vue.js, Sass, Flask, PostgreSQL, FastAPI)**

Countless hours devoted attempting to keep up with the latest in the field
Built personal portfolio from scratch in Vue.js

**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

**Pacman and Minesweeper Clones (JavaScript)**

Both games use fast algorithms and appropriate data structures
Ghosts in Pacman use Dijkstra's algorithm to find shortest path to Pacman

**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

**iOS Phone Development (Objective-C and Lua)**

Built multi-directional shooter using the Corona SDK for 48-hour hackaton
Created a tower defense game using Objective-C

**Honorable Github Repository Mentions**

Jot - Terminal based markdown note taking helper with device synchronization
Pixel Chaser - An image drawer using image processing to drive a DFS based drawer
Tblr - A set of CSS classes for rapidly positioning HTML elements
Dotfiles - My dotfiles across all Linux based computers I own