Timothy M. Hoyt

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web portfolio – https://timhoyt.net

Mechanical engineer transitioning to full-stack web developer.

Various positions and projects surrounding manufacturing, fabrication, machining, design, and robotics. Experienced with microcontrollers, PLCs, robotics, welding, prototyping, and more. Most recent years focused on learning and producing web-based applications, websites, and games.

Primary technologies are JavaScript, HTML, CSS, React, NodeJS, and PlayCanvas. Some experience with Python, C, VBA, VB, C#, PHP, Postgres, MySQL, cPanel, SSH, Encryption, APIs, Tailwind, Bootstrap, WordPress, MATLAB, and Simulink. Additional experience working with 2D and 3D graphics, design, and AI. Web project highlights can be viewed on web portfolio.

Education

University of Arkansas *2013 — 2017*

B.S. Mechanical Engineering, 3.0

Electives: Optics, Linear Algebra, Additive Manufacturing, Control Systems, Microprocessors, Macro and Microeconomics. Project focused, excelled in SolidWorks (associate certified) including FEA, technical drawings, simulation, 3D printing, and CNC milling (SolidCAM). Employed as Technical Assistant II to the research machinist under work-study program.

Bentonville High School *1999 — 2004*

High School Diploma, Engineering

Team leader for B.E.S.T. Robotics “Transfusion Confusion” competition. Project Lead-The-Way engineering program. Digital Electronics project course. Industrial projects course. Autodesk Inventor training. MasterCAM training.

Employment

Alert Innovation/Walmart Robotics *2022 — 2023*

Robotics Test Engineer

Alphabot team member in NW Arkansas. Monitored, improved, and tested automated storage and retrieval systems for prototype and preliminary fulfillment centers. Systems monitoring, reporting, updating, and testing. Robot recovery, electrical troubleshooting, and PLC modification. Ticketing and analysis of various complications. Vision system training and setup. Future implementation and workplace improvement conceptualizing.

American Tubing International *2019 — 2020*

Manufacturing Engineer

Converted drawings of copper and aluminum tubing parts for HVAC and fluid systems in SolidWorks. Managed plant-wide product workflows throughout testing and production. Met and verified quality assurance specifications within ±0.002”. Designed and oversaw fabrication of custom tooling. Technical maintenance and modification of specialized machinery. Material callouts and sourcing.

Ball Corporation/Aerotek *2018 — 2019*

Assistant Plant Engineer

Documented machine maintenance procedures. Converted manuals to online formats. Developed instruction sets for machine changeovers. Designed, implemented, and analyzed plant-wide forklift tracking system. Assisted in machinery modifications. Researched material handling methods. Analyzed prototype robotic manufacturing line.

University of Arkansas *2013 — 2014*

Technical Assistant II to Scientific Research Tech

Shop organization, part machining and student assistance. Helped with Mini Baja construction and competition. Portable CNC station construction. Cleaning and calibration of mills and lathes. CNC router setup. Lab material preparation.

Self Employed *2008 — Present*

Handyman, Math/Physics Tutoring, Freelance Projects

Various jobs including lawn mowing, boat detailing, dock repair, yard cleanup, painting, remodeling, firewood, tree-buying, ATV repair, and more. Private tutoring in math and physics. Designed, developed, built, and installed advanced constellation display. Various web-based projects (see Project Highlights).

D-Sign *2005 — 2008*

Custom Electronic Advertisement Fabricator

Welder/fabricator constructing custom pole and monument signs. MIG and ARC welding of steel and aluminum; detailed structural planning and execution; ballast wiring; plastic form molding; painting; CNC routing of wood, sheet rock and metal; inventory tracking; and crane-truck operation.

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Project Highlights

RuneBattle.com Web Game *2024*
Designed, built, and launched full-stack, cross-compatible, mobile-first browser-game. Solo project built from scratch in JS, HTML, CSS, and a Firebase backend.

McCarthyElectricInc.com Website *2023*
Designed, built, and launched full-stack website for local electrical company. Solo project, contracted by local company, built from scratch in JS, HTML, CSS, and served on Node Express. Includes custom notification messenger.

SeaCrow Arts *2022-Present*
Helped strategize and launch local art business. Developed production process, sales channels, promotion, brand imagery, and displays. Assisted with many market and vending events with success.

Job Site Tracking Web App *2022*
Designed and built a custom mobile-friendly web-app for tracking many aspects of on-site progress for multiple residential and commercial projects. Solo project, contracted by local company, built in Bubble-Apps.

Frothy Java Café Web App *2022*
A React landing page for and fantastical coffee shop. A sample website, built from React and CSS to display eyepopping menus. Featuring auto scrolling image galleries, cycling background photography, and translucent panels. A solo demonstration project.

Bomb.Zone Web App *2021*
A web app that collects and provides access to multiple mobile-friendly web apps all in one location. Concepted, designed, and developed fully responsive full stack application. React front end with full screen, sliding panels, messaging form, custom filter system, and Node Express rest API backend all served from a cPanel cloud system. Solo project as a free public web platform for webapps.

Swabble Word Game *2021*
A 3D, mobile-friendly Crush or Bejeweled style game, but with words. Concepted, designed, and developed full responsive application using the PlayCanvas framework. JavaScript, WebGL, searching algorithm, and wordlist management. Solo project developed as a free public game.

Buslane.com Website *2019*
Assisted in initial development of website for booking bus rentals across the US. A short stent on a small team modifying WordPress site to meet targets for initial prototype. My role was mostly PHP modification for small design tweaks.

Forklift Tracking *2019*
Designed and implemented portable time-lapse photography, tracking a manufacturing plant's forklift workflow. Millions of images manually processed, fully documenting all tasks, compiled into an analysis report of total efficiency.

RGB LED Constellation Display System *2018*
Designed, built, and installed an advanced custom programmable display system in a mansion's outdoor ceiling. Consisted of 2,163 hand-installed LEDs, DC power system, fiber optics, user control panel. Displays real constellations and surrounding stars with animating and cycling effects.

Power-Floor for Robotic 3D Printer *2017*
Designed, built, and tested a system for powering 3D printing robots from the floor, maintaining mobility and uninterrupted printing. Circuit design, custom dummy-load, and special geometric and material research.

System Identification and Discrete PID *2017*
Studied and implemented concepts of black-box system identification and discrete PID controllers. Used existing non-linear PLC system allowing user set-point control from HMI interface. Simulated PID in Simulink.

Trotify - Capstone Industrial Project *2016*
Team leader of senior MEEG university project. Improved existing product for manufacturability, marketing, functionality, reliability, appearance, and cost.

Mini Baja Competition *2015*
Assisted in part creation and general construction. Also attended the event in Pittsburg, KS, including welding and volunteering for carnage crew.

B.E.S.T. Robotics Competition *2004*
Team leader of Project-Lead-The-Way robotics competition team. Designed and constructed remote machine for the Transfusion Confusion contest of 2003. Took 4th place at regionals. Autodesk Inventor modeling, CNC milling and circuit wiring.

Personal Projects
Fire staves — Image staff (persistence of vision) — Binaural feedback visual stimulation goggles — Custom Anet A8 3D printer — UV lighting display — Custom forge and earth kiln — Numerous coding projects including microcontroller applications, automated mathematical music visualizations, games, algorithms, and utility applications.