

Matthew Fredrick

Software Developer

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OBJECTIVE

I am looking to leverage the skills and experience from my engineering career to tackle new challenges in software development. I would like to continue to build on a solid knowledge base in DSP, digital audio and development in a position that pushes me to learn and push boundaries in the field. I'm particularly interested in expanding my knowledge of programming with new languages and frameworks through developing for innovative applications.

EDUCATION

BS Mechanical Engineering (GPA 3.58)

Worcester Polytechnic Institute

Grad: 2013

Relevant Coursework: MATLAB/Octave algorithm development and programming for signal processing and design calculations, Java, engineering testing using signal analysis from sensors, CAD, architectural acoustics

Specialist Certificate Creating Audio Plugins with JUCE and C++

Kadenze

Awarded: 2019

Description: Project-based course of study in advanced audio plugin development. I created a Chorus/Delay effect plugin which I host and maintain as a GitHub repository.

PROJECTS

Augmented Reality Device :

- Bringing computer vision, MIDI, and audio synthesis together in a mobile augmented reality device
- Leading technical and engineering operations for new product development

Utilized: JUCE, OpenCV, C++, Visual Studio, Git, audio synthesis, DSP, hardware prototyping

Audio Delay Plugin (VST/AU/AAX) : github.com/mcfredrick/TimeMachineDelay

- Developed a plugin using C++ and the JUCE framework to apply delay/chorus effects to audio
- Plugin integrates with digital audio workstations and parameters are accessible for automation
- Utilized DSP algorithms for delay, LFO-modulated chorus, and gain control in reusable class structure
- Implemented a preset management system allowing storage of user parameter presets
- Provided a clean, attractive UI with intuitive controls

Utilized: C++, JUCE, Visual Studio, Git, InVision Studio, digital signal processing, Ableton, Cakewalk, DAWs

SKILLS

C++

Python

OOP

Git

MATLAB

DSP

JUCE

Java

EXPERIENCE

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|----------------------------|---------------------------------------|--------------------------|
| Founder / Developer | DayJobDevelopment and dIOtonic | 06/2019 - present |
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Breaking new ground on a project bringing computer vision, MIDI and audio synthesis together in an augmented reality device. Also developing a suite of tools to bolster productivity and creativity in audio production with mobile and desktop apps and plugins. Creating templates and frameworks to streamline development.

Skills Utilized: C++, JUCE, OpenCV, Visual Studio, Git, InVision Studio, digital signal processing, DAWs, MIDI

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| Project Manager | Dave A. Mangano Fine Carpentry | 08/18 - 07/19 |
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Fostered excellent relationships with clients, design professionals, contractors, and colleagues. Provided high-quality solutions and material selections within a tight budget and deadline.

Skills Utilized: project management, budgeting, teamwork, leadership, advocacy, materials sourcing

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| Inventor Drafting and Automation Specialist | Ipswich Bay Glass | 02/18-07/18 (contract) |
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Pioneered programs and developed algorithms to reduce time to production by automating drafting work flow and data handling in Autodesk Inventor. Worked with a team to migrate drafting from AutoCAD to 3D CAD technology ahead of competitors.

Skills Utilized: C++, VBA, Excel, iLogic, Vault (version control), Autodesk Inventor, Inventor API, AutoCAD

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| Design Engineer | SARC Global Inc. | 10/17-01/18 |
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Managed R&D projects from conception to production process. Used data analysis, cost-tracking, and documentation to maximize profitability and effectiveness of designs. Produced 3D models and prototypes using Solidworks and 3D printing. Created the documentation for products and processes under development and maintained records of revisions and changes.

Skills Utilized: Solidworks, DFM, GD&T, product development, cost analysis, design analysis, technical writing

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| Chief Marine Engineer | World Ocean School | 08/16-06/17 |
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Oversaw the engineering systems aboard Schooner Roseway on an international educational voyage. In this role, I documented the shipboard mechanical and electrical systems, planned for expected modes of failure and maintenance needs, and sourced materials and information to prepare for operations where self-sufficiency was required and down-time of critical systems was unacceptable.

Skills Utilized: electrical/mechanical troubleshooting, marine systems engineering, resource management, failure mode prediction, critical component inventory, materials sourcing, design workarounds

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|---|---------------------------------------|--------------------|
| Solutions and Documentation Engineer | Vacuum Technologies Inc. (VTI) | 09/14-09/15 |
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Led technical operations for the organization's North American outpost and reduced service calls by improving documentation and product user interface. Worked with a team to improve PLC machine control GUI development. Debugged and improved control algorithms. Wrote and maintained technical documentation including the North American product operation manual for a product line, engineering and troubleshooting guide to streamline service calls, and the North American web page for an international equipment manufacturer. Provided remote and on-site support, troubleshooting and technician training.

Skills Utilized: FBD PLC programming, controls integration, electro-mechanical design, Solidworks, technical writing, customer support, troubleshooting