



# MATTHEW FREDRICK

SOFTWARE ENGINEER

## SKILLS

C++ Visual Studio Xcode

Audio MIDI VST / AU

JUCE GIT Jira DSP

Cross-platform Dev. UI / UX

Python Agile DAWs

Web APIs OOP JSON

Confluence Tech. Writing

## OBJECTIVE

I am excited to leverage my audio software engineering experience to tackle new challenges. I'd like to bring my knowledge of music technology and product development to a team of innovators leading the industry. I'm happiest when I'm learning and I'm always striving for personal and professional growth.

## EDUCATION

Bachelor of Science - 2013

Mechanical Engineering

**WORCESTER POLYTECHNIC INSTITUTE**

- Programming for DSP, iterative design calculation, and data analysis
- MATLAB/Octave, Java
- Technical writing
- Architectural acoustics

Specialist Certificate - 2019

Creating Audio Plugins with JUCE & C++

**KADENZE**

- Project-based course in advanced audio plugin development.
- Built a Chorus / Delay plugin.
- The source code is available here:  
[github.com/mcfredrick/TimeMachineDelay](https://github.com/mcfredrick/TimeMachineDelay)

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in [linkedin.com/in/mattcfredrick](https://linkedin.com/in/mattcfredrick)

🐙 [github.com/mcfredrick](https://github.com/mcfredrick)

## PROJECTS

**PIANO ROLL MIDI EDITOR**

BandLab

- Collaborated with designer, project manager, QA and development team to specify and deliver an elevated UX in a richly-featured creative tool
- Implemented GUI and performance-optimized data model for creating and editing MIDI performances using a piano roll view.
- Wrote code for buffering MIDI from data model for streaming in our multi-threaded audio engine
- Wrote code to persist user-created MIDI sequences with relevant event data
- Implemented an accompanying multi-touch compatible on-screen MIDI keyboard with QWERTY to MIDI functionality

**AUDIO PLUGIN BROWSER**

BandLab

- Collaborated with development team to devise and implement data structures and logic for performant search, categorization, and retrieval of audio plugins meeting dynamic user criteria
- Implemented GUI and full feature set for a flexible, reusable plugin browser
- Refined browser UX with feedback from QA, beta testers, and dev. team peers

## EXPERIENCE

Nov. 2019 - Present

**SOFTWARE ENGINEER**

BandLab

- Crafting innovative audio software in C++ to fulfill our mission to bring fantastic music-creation tools to a global audience
- Leverage skills in Visual Studio, Xcode, C++ STL, Git, and the JUCE UI framework to create clean, efficient, maintainable and reliable cross-platform applications
- Utilize audio plug-in SDKs ( VST / AU ) from both the host and plug-in sides striving for flawless integration of third-party software
- Bringing my passion for UI / UX to the implementation of elegant, reusable solutions in our growing GUI library which is shared across our desktop apps
- Contributed MIDI rendering, editing, and storage capability to our multi-threaded engine
- Designed, implemented, refactored and debugged code with diverse applications including GUI elements, DSP, user data persistence, and cloud integration
- Led Apple Silicon support efforts for desktop development porting Intel intrinsics to ARM alternatives for ARM Mac builds
- **Skills Utilized:** C++, Git, Visual Studio, Xcode, JUCE, MIDI, VST/AU, Audio, Jira, UI / UX, OOP, STL, JSON

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## EXPERIENCE continued

Aug. 2018 - July 2019

### PROJECT MANAGER

Dave A. Mangano Fine Carpentry

- Fostered excellent client and colleague relationships in a leadership role on a team of professionals with diverse disciplines and skills
- Delivered high-quality construction solutions within a competitive budget
- **Skills Utilized:** QA, project management, prioritizing, client relations, budgeting, teamwork, leadership, advocacy

Feb. 2018 - July 2018 ( Contract )

### DRAFTING & AUTOMATION SPECIALIST

Ipswich Bay Glass

- Reduced time to production by automating drafting and BIM workflows in Autodesk Inventor
- Created custom software and Inventor plug-in solutions for 3D CAD / CAM and project data handling to increase our competitive edge
- **Skills Utilized:** Autodesk Inventor API, VB.NET, VBA, Excel, iLogic, Vault version control, AutoCAD

Oct. 2017 - January 2018

### DESIGN ENGINEER

SARC Global Inc.

- Maximized profitability and design effectiveness using data analysis, cost-projections, and new manufacturing techniques.
- Introduced additive manufacturing techniques and CAD model analysis for new design testing
- Produced prototypes, computer models, and multimedia assets for R&D projects
- **Skills Utilized:** Product design, Solidworks modeling, 3D printing, technical writing, QA, manufacturing cost analysis

Aug. 2016 - June 2017

### CHIEF MARINE ENGINEER

World Ocean School

- Completed an international educational voyage as chief engineer on the historic landmark pilot schooner, Roseway
- Oversaw mission critical systems in compliance with USCG, FCC and TSA regulations. Provided water, power, and amenities for 37 crew and students through self-sufficient shipboard systems while offshore
- **Skills Utilized:** teamwork, management, advocacy, materials sourcing, troubleshooting, systems design, resource management, failure mode prediction

Sept. 2014 - Sept. 2015

### SOLUTIONS ENGINEER

Vacuum Technologies Inc.

- Reduced technical support reliance by implementing new documentation standards.
- Fulfilled client technical needs by specifying and installing customized solutions for government and institutional facilities
- **Skills Utilized:** technical writing PLC programming, electro-mechanical troubleshooting, customer support