Paul Miller-Schmidt

paul.miller-schmidt@yale.edu | paulmillerschmidt.com | github.com/paulmillerschmidt | linkedin.com/in/paul-miller-schmidt

EDUCATION

Yale University, New Haven, CT, GPA: 3.76 - Bachelor of Science, Computer Science, May 2023
Relevant Coursework: Software Engineering; Natural Language Processing; Computational Intelligence for Games; Systems Programming and Computer Organization; Data Analysis; Data Structures; Programming Techniques; Discrete Mathematics; Theory and Implementation of Self-Driving Cars; Algorithmic Computer Music; Electronic Instrument Design

SKILLS

Languages: C, C++, Java, Python, Supercollider, Racket, JavaScript, HTML, CSS, SQL
Frameworks and Tools: React, Vue, Nuxt, Jira, Bitbucket, Git, TestRail, Firebase, TensorFlow, SpaCy, Pandas

EXPERIENCE

Artiphon, Nashville, TN (Remote)   2022
Software Engineer Intern
- Developed cross-platform C++ code to facilitate MIDI communications between Mac/iOS and low-level embedded systems.
- Designed optimization algorithms to decrease time and space complexity of communication protocols between devices.
- Leveraged CI/CD pipeline and automated testing to deploy core product features using Bitbucket, Jira, and TestRail.
- Organized and facilitated discussions between software, QA, and business teams to coordinate product vision.

GravitateAI, Boston, MA   2021
Software Engineer Intern
- Built AI-based patient-provider matching algorithm in Python for Guidely.com (personal coach marketplace).
- Designed sentiment analysis model using Word2Vec and SpaCy libraries. Analyzed data from 500 patient intake surveys (client goals, demographics) and 150 provider profiles (education, methods, target base) to optimize provider-client pairings.
- Processed audio and video files with Google Cloud's speech-to-text API to feed as training data for analysis model.

Albo Climate, Tel Aviv, Israel (Remote)   2020
Head Technical Consultant
- Led team of 5 Yale students across all contracted Albo Climate objectives. Served as liaison to Albo's executive team.
- Built JavaScript interfaces to demo AI-powered carbon sequestration visualizer and improve client's UI/UX.

Brookline Teen Center MakerSpace, Brookline, MA   2015-2018
Founder and Director
- Founded community center for creative engineering projects, including automated hydroponics systems, drones, and music synthesizers. Received local awards for exceptional contributions to Brookline. Center is still operational.
- Created Young Makers Program, serving 200+ middle school students with 20+ trained staff. Offered 3-5 engineering classes per week for over three years. Wrote grants and received $30,000 to purchase technology, tools, and equipment.

SOFTWARE PROJECTS

MelGen - Yale University Open Music Initiative   2023
- Developed LSTM-based melody generator with attention to underlying harmonic structures using NumPy and TensorFlow.
- Designed data pipelines to scrape and parse musical data into a functional MIDI format using Music21, JSON, and Pandas.
- Researched and applied various machine learning models for melodic generation, such as LSTMs, GANs, and VQ-VAEs.

WalkHome   2022-2023
- Led a startup of six engineers to build an app for users to track their friends' commutes home with a variety of safety features.
- Developed Vue/Nuxt-driven PWA with Firebase backend. Integrated Google auth, Maps API, and push notifications.
- Automated unit testing (Jest) and implemented deployment processes. Iteratively improved features based on user feedback.

Markov Music Engine   2022
- Built context-sensitive, Markov-based melody generator in C++. Algorithm incorporated a Trigram Hidden Markov Model and user-specified hyper-parameters (repetition, variance, variability, chord tendencies) for precise melodic control.
- Program parsed artist-specific MIDI to emulate their style. Model was designed to work on low-memory, embedded systems.

GrooveBlocks   2020-2021
- Founded startup to create original, combinatory tools for composition-based music education. Developed new pedagogy based on exploratory and accessible composition – independent of instrument mastery or music theory literacy.
- Led a team of five developers and two designers to build core hardware product and complementary Java application.
- Managed all aspects of product vision and development. Modeled and fabricated 3D designs using SolidWorks. Devised and built modular MIDI devices driven by Teensy micro-controllers. Designed Java-based Android application to act as the audio engine. Wrote and tested C++ driver code to relay sensor information and MIDI data from Teensy to Android application.