Paul Miller-Schmidt

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EDUCATION

Yale University, New Haven, CT, GPA: 3.64 - Bachelor of Science, Computer Science, May 2023
Relevant Coursework: Software Engineering, Natural Language Processing, Computational Intelligence for Games, Theory and Implementation of Self-Driving Cars, Algorithmic Music, Sound Synthesis, Electronic Instrument Design

Languages: C, C++, Java, Python, JavaScript, TypeScript, NodeJS, Supercollider, Racket, SQL, R, MATLAB
Tools & Frameworks: React, TensorFlow, PyTorch, Keras, Git, Firebase, MaxMSP, Ableton, Logic Pro, Sibelius
Hardware: microcontrollers, embedded systems, PCB design, audio interfaces, CAD/CAM, 3D printing

EXPERIENCE

Mathpix, Brooklyn, NY 2023-Present
Machine Learning Engineer

- Developed OCR and segmentation models using attention mechanisms and CNNs, designing custom architectures and loss functions to improve performance. Engineered data augmentation algorithms and fine-tuned hyper-parameters.
- Spearheaded overhaul of the string/document processing pipeline, including tokenization, normalization, and entity extraction, resulting in 20% faster processing times and enhanced accuracy for complex text and specialized notation.
- Implemented comprehensive evaluation framework on validation and production data to benchmark model improvements.
- Designed and optimized low-latency inference pipeline and API for scalable and reliable OCR/PDF processing.
- Developed automatic annotation and verification tools, increasing annotator productivity by 30% and reducing redundancy.
- Conducted product demonstrations, managed customer-facing issues, and represented the technical team in client meetings.

Artiphon, Nashville, TN (Remote) 2022
Software Engineer Intern

- Implemented cross-platform C++ code to facilitate MIDI communications between Mac/iOS and embedded systems.
- Developed melody generation system using Trigram Hidden Markov Model, featuring artist style emulation and user-controlled parameters for melodic and rhythmic variation while optimizing for low-memory constraints.
- Implemented classroom integration strategies with education team, creating guidelines for music education applications.
- Collaborated with the music synthesis team to design intuitive sound kits tailored to diverse user needs and skill levels.
- 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 (Remote) 2021
Software Engineer Intern

- Built NLP patient-provider matching algorithm for Guidely.com (personal coach marketplace) with 80% match accuracy.
- Designed sentiment analysis model (Word2Vec, SpaCy), 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.

Brookline Teen Center (BTC) MakerSpace, Brookline, MA 2015-2018
Founder and Director

- Founded community center for creative engineering projects, including automated hydroponics systems, drones, and music synthesizers. Received BTC Teen of the Year and Brookline Youth Award for exceptional contributions to the community.
- Created Young Makers Program, serving 200+ middle school students and training 20+ staff. Taught 3-5 engineering classes weekly for three years. Wrote grants and received $30,000 to purchase 3D printers, electronics, and fabrication tools.

SOFTWARE PROJECTS

GrooveBlocks 2020-2021

- Founded music education startup using combinatory musical blocks to make composition accessible to beginners.
- Led team of 7 (engineers and designers) to develop hardware product and companion application from concept to testing.
- Developed modular MIDI devices with embedded sensors that translated physical manipulation into musical elements.
- Built full-stack system spanning 3D-printed hardware, MIDI controllers, Android app, and embedded audio processing.
- Designed progressive education system that introduced musical concepts based on individual student skill and engagement.
- Conducted user testing with educators and middle schoolers, iteratively refining product and pedagogy based on feedback.

MelGen - Yale University Open Music Initiative 2023

- Researched ML approaches for music generation, exploring techniques for embedding harmonic structure.
- Developed chord-aware melody generator using LSTM networks, comparing performance across different architectures.
- Built comprehensive data pipelines to scrape and parse musical data into a functional MIDI format (Music21, JSON, Pandas).