CHARLES N. DAIGLE (he/him/his)

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OBJECTIVE

Highly motivated individual seeking positions in consumer music product R&D that enable application of a wide software/hardware skillset and excellent intuition for musicians' needs.

RELATED EXPERIENCE

Aug 2022 – Nov 2022 **Cofounder and Lead Product Designer**
Imagine Analog
- Designed a novel analog multi-effect pedal system, cutting costs by ~150% vs. traditional systems
- Acquired funding twice through Generate, Northeastern's engineering entrepreneurship build studio

May 2021 **Product Co-Designer and Developer**
Mobile Real-Time Audio Effects Unit
- Designed and built a portable digital real-time guitar effects system for mobile phones in Pure Data

Dec 2019 **Product Designer and Builder**
Wahtz Wah
- Built an analog LRC-filter wah-wah pedal from a partial kit and characterized its frequency response
- Modified existing design and successfully sourced replacement parts from multiple suppliers

RELATED EXPERIENCE

Aug 2022 – Nov 2022 **Lead Electrical and Embedded Systems Engineer**
Palm Connectivity, LLC
- Design and test novel Arduino-based hardware for vehicle geolocation using low-power wide-area Helium network IoT sensors
- Write Arduino and JavaScript code to receive, process, and send bytewise packet data
- Design products to fit FCC certification in the LoRaWAN US915 MHz band

Dec 2021 – May 2022 **Research Assistant and Hardware Engineer**
Center For Design at Northeastern University
- Design auditory exhibition using IR sensors, Bela/BeagleBone embedded computer, acoustic actuators
- Co-designed DSP engine in C++ to perform granular synthesis and DSP from spoken audio samples
- Demonstrated installation at Design Research Week (Boston) and Design Research Society (Bilbao)

Jan 2021 – July 2021 **Test Engineering Co-op**
MSI Transducers, Inc.
- Collect electro-acoustic data of sonar transducers using instrument racks and various test softwares
- Design, repair, and troubleshoot hardware as needed to complete test plans
- Add features to test software written in LabVIEW, reducing time spent testing by ~100%

Jan 2020 – May 2020 **Analogic Corporation**
Data Scientist/Engineering Tech Co-op
- Regularly process, filter, and visualize up to ~2 TB of X-ray luggage data with Bash and Python scripts
- Write and analyze machine learning classifiers to improve threat detection algorithms

SKILLS

Languages
- C/C++
- Python
- MATLAB
- SystemVerilog
- LabVIEW
- PHP, HTML, CSS, JavaScript
- Racket

Tools/Software
- LTspice
- Arduino
- Jupyter Notebook
- PureData
- Bash
- Windows Subsystem for Linux
- CST Studio Suite
- Intel Quartus
- Vivado
- AutoCAD
- SolidWorks.

Hardware
- ESP32
- Raspberry Pi
- BeagleBone Black
- Vector network analyzer
- Impedance/gain-phase analyzer
- LCR meter
- Oscilloscope
- Switch matrix
- Function generator
- Analog circuit assembly (breadboard, soldering)
- Analog filter

EDUCATION

BSEE in Electrical Engineering and Music, with Concentration in Music Technology, Minor in Physics
Northeastern University Class of 2023, Boston, MA

GPA: 3.9/4.0

Achievements
- Tau Beta Pi Honor Society
- IEEE-HKN Honor Society
- Academic Scholarship
- Deans List 2022, 2021, 2020, 2019, 2018
- George Eastman Young Leader's Award

Related Engineering Coursework
- Embedded Design: Enabling Robotics (lab)
- Computer Science 1 (lab)
- Electronics (lab)
- Circuits/Signals: Biomedical Applications (lab)
- Digital Design and Computer Organization (lab)
- Professional Issues in Engineering
- Advanced Writing for Tech. Prof.

Related Music Technology Coursework
- Electronics for Music
- Embedded Audio Programming
- Computer Music Fundamentals
- 40,000 Years of Music Technology
- Music in Everyday Life
- Jazz Music History
- Rock Music History
- Music Theory 1, 2

Related Mathematical Coursework
- Linear Systems (Signal Processing)
- Noise and Stochastic Processes
- Diff. Equations & Linear Algebra
- Multivariate Calculus

Related Physics Coursework
- Modern Physics
- Thermodynamics and Statistical Mechanics
- Physics of Electronics