Josh **Booth**

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WORK EXPERIENCE

CURRENT, FROM JUN 2022 (FT)

Microchip Technology
Applications/Marketing Engineer

Bridged the gap between technical aspects of 8-bit microcontroller products and their marketing strategies. This role involved both developing the initial mass market campaign for multiple products and explaining technical concepts in an easily digestible way to the mass market and field sales reps. Internally, I also lead an analytics initiative that lead to better data-driven decisions about our marketing campaign strategies.

JUN 2017 - JAN 2022 (FT/PT)

United States Naval Research Laboratory
Electrical Engineer Student Trainee

Developed machine learning and a data analytic foundation through multiple projects involving detecting and classifying objects in satellite imagery to improve field response time, recovering noisy RF communications by augmenting a message passing algorithm with a Bidirectional RNN with GRU cells, and identify promoter sequences in DNA using Bidirection RNN with LSTM cells.

SEP 2016, JUN 2022 (FT/PT)

Booth Oil and Gas LLC.
Prototype Engineer

Developed specialized prototypes for novel problems the client faced in both day-to-day operations as well as for expanding the business, such as building an human-sized PEEK 3D printer for biofuel refinement. I offered technical expertise for project planning, cost estimation, feasibility studies. In addition to other project management tasks, I communicated with the client to manage their expectations and incorporate or remove features as their needs changed.

EDUCATION

2018-2022 **Computer Engineering**
SUMMA CUM LAUDE; 3.98 GPA; COMP ORG SI
Bachelors of Science
Shippensburg University of Pennsylvania

2018-2022 **Mathematics**
Minor
Shippensburg University of Pennsylvania

PUBLICATIONS

2023 AN4889: Using Core Independent Peripherals (CIPs) to Implement a Peltier Cooled Metal Plate

NOTABLE PROJECTS

DMX Light Show

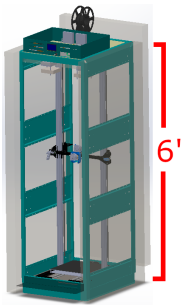
A real-time audio processing light show highlighting the flagship features on the PIC18Q71 microcontroller. Using a single OP-AMP, it extracts 7 bands of frequencies from an audio signal using a custom band pass filter design. It then sends lighting information over DMX to 1 of 7 nodes to create a light visualization. Each nodes updates it's WS2812 LEDs via their SPI drivers that have been logically equated to the 1-wire protocol using CIPs.

AI-Driven Security System

Protoype engineer for solar-powered security system that gives real-time alerts with video anytime a classified human, vehicle, or large animal is spotted on the property. The client also wanted all footage to be stored locally for legal purposes, so a custom program extracted motion clips after the footage was saved, which could then be reliably transported back to a central node to do ML classification on.

3D PEEK Printer

Designed and build a large-scale 3D printer capable of printing engineering-grade plastics. This printer was specialized to print static mixers out of PEEK for biofuel refinement. Involved in the development was designing the kinematic system, thermal dynamics, and software to safely control it's operation while dealing with hazardous temperatures and voltages.



The Cold Plate

A reference design showing the most efficient way to perform the most common microcontroller tasks on a PIC16, all wrapped up into an engaging demo. It has become Microchip's most copied code repository.

AWARDS

1985 **Faculty of Science Masters Scholarship**
Massachusetts Institute of Technology

1983 **Top Achiever Award – Physics**
The University of Washington

2018 Machine Learning in Radio Frequency Communications
2017 Prediction of Bacterial Promoter Sequences using Machine Learning