

EDUCATION

Indiana University *MS in Computer Science*

Bloomington, IN
current, expected May 2018

BS in Mathematics, BS in Computer Science

Aug. 2013 to May 2017

Hutton Honors College. Indiana University Founder's Scholar and Dean's List, 2014 through 2017, BS/MS program

Relevant courses: Differential Equations, Numerical Analysis, Data Structures, Algorithms, Applied Machine Learning

EXPERIENCE

DemandJump, Inc

Indianapolis, IN

Data Analyst Intern

Jan. 2017 to Aug. 2017

Wrote and altered Python wrapper and C++ driver package for computing persistent homology. Used ARIMA modeling, entropy computation, and information gain for anomaly detection on Markov models. Worked with over 50GB of market and search data. Worked with the Snowplow Canonical event model for computing optimal event pathways and identity stitching. Worked on graph visualization and generation with Lightning and Gephi.

BeeCorp, Inc

Bloomington, IN

Data Analyst Intern

Jan. 2018 to Present

Analyzed accelerometer and GPS data to build Hidden Markov Models for production code for asset tracking. Ran .WAV audio files through discrete Fourier transforms to build a model analyzing bee stress and behavior.

Indiana University

Bloomington, IN

Assistant Instructor

Aug. 2015 to present

Instructor for P442 (Digital Systems) and C335 (Computer Structures) systems specialization courses on embedded systems programming using C and assembly. Managed and organized website for C335. Worked with ARM Cortex-M3 processors, I/O, and various hardware protocols. Built, managed, and debugged drivers for different sensors and outputs. Worked with ChibiOS RTOS for building and managing students' trail counters.

Research Assistant

Jan. 2015 to present

Researched current topics in deep learning with neural networks. Worked with Arduino sensors and Android applications for observing patient behavior. Worked with Soldering, sensor programming, mobile development, conducting user studies, and data analysis.

Mackie Neuroscience Research Laboratory

Bloomington, IN

Research Assistant

Feb. 2014 to Apr. 2017

Compared differences of genetic make-up in diverse subjects DNA sequences through genotyping and sequencing. Researched the effects of various drugs on the endocannabinoid system, and how the healing factor is affected.

PROJECTS

Gus Grissom Trail Counter / Dark Sky Projects

May 2016 - Present

Thesis work with professor Bryce Himebaugh and the DNR on a custom-built, low-energy accurate mobile trail people-counter able to send data through Bluetooth, offloading data to a private website from a mobile application. Used Fourier transforms to analyze accelerometer signals. Similar hardware and firmware generalized for use in Dark Sky location project for a custom light pollution sensor capable of cellular data transmission. Worked with custom logic and circuit design through EDA tools such as Autodesk Eagle PCB Design Suite.

Ultralight Sensors for Avian Migration Studies

May 2016 - May 2017

Worked with professor Geoffrey Brown on a custom-built, low-energy, low weight, IoT STM32 based GPS with accelerometer communicating through SPI to monitor and understand bird behavior.

Other Projects

Wrote a Monte Carlo simulation using Metropolis-Hastings algorithm of Kaon pair production from high energy Photon-Proton scattering. Worked with a peer on Arduino driven device for car blinds. Worked with STM32 and Digilent Basys3 FPGA to create a Microprocessor. Created Neural Network run on the MIT CIFAR10 dataset. Wrote K-Means, EM, Linear/Logistic Regression algorithms in R; Naive Bayes and a Two-Layer Neural Network in Python.

PROFICIENCIES

Spoken Languages: Fluent in Russian; conversant in Ukrainian and German

Programming Languages: C, Python, Java, Latex, R, C++, GDB, Verilog, Arduino, Javascript, MATLAB, Bash