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## 1. EDUCATION

### **Central Connecticut State University, 2015-2017**

Bachelor of Arts in Mathematics with Computer Science Minor

### **Tunxis Community College, 2013-2015**

Studied Liberal Arts and Sciences, Mathematics/Computer Science

## 2. RELATED SKILLS

- Proficient programmer, comfortably works with Python, Java, Javascript, C/C++ (with some CUDA), Lisp/Scheme, some Solidity.
- Algorithm Design and Analysis
- Artificial Intelligence/Knowledge base design
- Programming Language Design/Formal Language Theory
- Machine learning experience: have studied SVM and Naive Bayesian Classification in detail, as well as designed a standalone classifier for Topological Data Analysis
- Blockchain/Distributed Systems Design
- LaTeX
- Working with various Microcontrollers/processors (Pyboard, Raspberry pi). Past projects have focused on using these for signal processing and gesture recognition in the form of Machine Learning
- Numpy, Scipy, Sage

## 3. RESEARCH/EMPLOYMENT EXPERIENCE

### **Directors Summer Program (Department of Defense)**

- Participated in Directors Summer Program (May 2017-August 2017)
- One of 25 participants chosen from over 300 applicants
- Received Top Secret// Sensitive Compartmented Information clearance with Agency special background investigation and full scope polygraph examination.
- Worked in Mathematics Research Group on a team project of mission importance.

- Analyzed various post quantum cryptosystems from coding theory and lattice theory.
- Applied knowledge of linear algebra, abstract algebra, probability/statistics to solve problems.
- Studied and implemented efficient probabilistic algorithms.
- Prepared and presented findings for presentation to the Institute for Defense Analyses at Princeton (Center for Communications Research) and Bowie (Center for Computing Sciences).
- Submitted detailed findings in an internal refereed technical paper using LaTeX.
- Prepared and delivered briefing on results for the Director, Deputy Director, Executive Director, and senior leaders of the National Security Agency.
- Used libraries: Numpy

#### **Topological Data Analysis/Algebraic Topology (Dr. Marian Anton, June 2016 - present)**

- Research in methods of computing Homology groups, as well as Persistent Homology. Developed a small Python library for TDA computations (Github)
- Designed and documented optimal algorithms for constructing boundary matrices of simplicial complexes, and delta complexes
- Finished Paper : **Generating Minimal Boundary Maps**-Anton, Renzullo

#### **Mechanical Manufacturing Technologies for Energy Sustainability (MET2)**

- Lead electronics team to integrate state of the art ElectroMyographic sensors into modular, easily affordable 3D printable childrens prosthetics
- Successful integration of efficient signal processing and accurate gesture recognition using modern machine learning techniques
- Developed a highly modular user interface for prosthetic devices
- Designed a new type of classifier around persistent homology and persistent features (will be fully implemented through 2018)

### 4. PRESENTATIONS

- MET2 project presentations at University of Hartford (April 2016, April 2017)
- Met2 presentation on Data Classification and its applications in Machine Learning to a team of engineering students (January 2018)

- NAWI Conference, New London Coast Guard Academy (May 2016)
- Generating Minimal Boundary Maps, Joint Mathematics Meeting (January 2017)

#### 5. HONORS/AWARDS

- Epsilon Pi Tau Honors Society (May 2016)
- Kappa Mu Epsilon Mathematical Honors Society (January 2017)
- Acceptance into Golden Key Society (declined)
- Deans list CCSU (Fall 2015 - Spring 2017)
- Foundation Scholarship (2016-2017)
- Recognition of Engineering/Research Achievement by CSCU President (June 15, 2016)

#### 6. VOLUNTEER EXPERIENCE/EXTRACURRICULARS

**Internship in Accounting office of Goodwill of Western and Northern Connecticut, 9/15-12/15**

- Filing/Organization
- Accounting for donations received during the holiday season

**CCSU Math Club member Jan 2016-present**