Alexander Speicher

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EDUCATION

Hofstra University Hempstead, NY
Master of Science in Computer Science - ***GPA** 3.7* May 2020
Bachelor of Science in Computer Engineering - ***GPA** 3.0* May 2018

TECHNICAL SKILLS

Programming Languages: Python, C++, C#, Java, Swift, ASM, SQL, TypeScript
Frameworks and tools: TensorFlow, Keras, Scikit-learn, Pandas, Numpy, Matplotlib, Git, React, Unity, PSpice, Kanban
Operating Systems: Windows 10, macOS, Linux - CentOS, Ubuntu
Databases: MySQL

WORK EXPERIENCE

Hofstra University Hempstead, NY
Research Assistant May 2018 – May 2020

- Worked on several research collaborations with academia, industry, and health organizations to create novel solutions with a focus on machine learning.
- Collaborated remotely with research teams using Git as version control.

Project with Intel PSG, UMass Lowell and Hofstra University May 2018 – May 2020
Evolutionary Cell Aided Design (ECAD) of Neural Networks

- Developed a neural network training program, using Python and TensorFlow, as a subsystem of ECAD, which uses an evolutionary algorithm to discover optimal neural network designs.
- Created Python program for automated data-set processing, feature selection and formatting, which enabled fast iteration and training on new data.
- Collaborated remotely with the team with weekly virtual team meetings, utilizing Git as version control and CentOS as development platform.

Project with Northwell Health and Hofstra University June 2019 – May 2020
Fetal Weight Estimation using Neural Networks (FWENN)

- Worked with real world data consisting of fetal biometrics and maternal demographic info.
- Responsible for data cleaning, exploration, feature extraction, and formatting.
- Explored neural network solutions and conducted model fitting on processed data.
- Final model achieved performance above traditional Hadlock estimation method.

Project with Hofstra University January 2019 – May 2020
American Sign Language Detection

- Developed an application to collect samples from individuals as well as infer signs using the Leap Motion Controller and the Unity engine.
- Designed and Developed UX and GUI of the application.
- Responsible for data collection, data cleaning, exploration, feature extraction, and formatting.
- Trained neural networks with TensorFlow on the processed data and integrated a neural network into the Unity application for real time hand sign detection
- Implemented new features given requirements of professor

Hofstra University Hempstead, NY
C++ Computer Science Teaching Assistant September 2018 – May 2020

- Aided Hofstra undergraduate students during class settings by answering programming related questions and helping with code debugging.

- Graded home work for the undergraduate class.
- Conducted code review on home work and advised students on improving structure and readability of their code.

Hofstra University Hempstead, NY
Audio Visual Services Student Employee September 2016 – May 2018

- Set up audio and video equipment for various types of meetings, conferences, and festivals at Hofstra University.
- Performed audio mixing, video play back and lighting enhancements.
- Provided customer service on call and in person to meet clients' requirements on setup and equipment.

Hofstra University Hempstead, NY
Computer Science Tutor September 2015 – May 2016

- Provided accessible and quality tutorial support in Python and C++ to undergraduate students in both individual and group settings outside of class.
- Aided students during CSC lab settings by answering programming related questions and helping with code debugging.
- Assisted teachers during lab exams by co-supervising students and answering test related questions.

COMPETITIONS

7x24 Metro New York 2017 Annual University Challenge April 2017

- Worked with a 5-person team to develop a prototype for a decentralized data center.
- Team utilized Kanban for managing software development of prototype.
- Created a Java program that creates a Docker virtual machine and connects to the Docker Swarm representing the data center nodes.
- Placed 2nd after presentation of research in the 7x24 Metro New York 2017 Annual University Challenge.

RESEARCH PUBLICATIONS & PRESENTATIONS

- Salvador Rojas-Murillo, Alyssa Pancho, Michael Cariaso, Alejandro Mato, Alexander Speicher, Oren Segal (2020) "Visual Learning Curves for American Sign Language (ASL) Alphabet" International Journal of Industrial Ergonomics,
- Andrew Rausch, Oren Segal, Alexander Speicher, Daniel Dimijian, Burton Rochelson (2020) "Fetal Weight Estimation Using Neural Networks" The Journal of Ultrasound in Medicine (JUM)
- Philip Colangelo, Oren Segal, Alex Speicher, Martin Margala (2019) "Artificial neural network and accelerator co-design using evolutionary algorithms" 2019 IEEE High Performance Extreme Computing Conference (HPEC)
- Patrick Rygula, Alexander Speicher, Jorge Contreras, Vividh Talwar (2017) "Decentralized data center (DDC)" 2017 IEEE MIT Undergraduate Research Technology Conference (URTC)

RELEVANT COURSES TAKEN

Data Mining, Text Mining, Introduction to Machine Learning, Deep Learning, Advanced Neural Networks, Methods of Random Process, Design & Analysis of Experiments, Principles of Database Management, Advanced Operating Design, Algorithm Design & Analysis

PROJECTS

- Real time American Sign Language detection in an Unity application; https://gitlab.com/AlexSpr/learningasl
- Training an unbeatable Tic-tac-toe AI with Q-Learning and self-play; https://gitlab.com/AlexSpr/TFToe
- Detection, classification, and synthesis of bird sounds; https://github.com/AlxSp/songbird