Sophia Kolak

Github
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Website

Education

Columbia University
Major: Computer Science
Minor: Mathematics
G.P.A. 3.7

Skills

Languages:
Python, C++, C, Java, MATLAB

WebDev:
HTML, XML, YAML

Databases:
mySQL, neo4j

Other:
Unix, Unity, LaTex, Git, ROS

Courses

Completed:

Advanced Programming
Computer Science Theory
Linear Algebra
Data Structures & Algorithms
Discrete Math
Accelerated Multivariable Calculus
Intro to CS in Java
Physics E&M
Calculus II, Calculus I
Geological Research in Death Valley

Fall 2019:

Artificial Intelligence
Introduction to Cryptography
Analysis of Algorithms

Research Experience

May-Aug '19 **Carnegie Mellon REU in Software Engineering** — RA
- Worked with CMU SquaresLab to Quantify software quality and popularity within the Robot Operating System (ROS).
- Mined extensive data on ROS packages and their relationships.
- Modeled the ROS ecosystem as a dependency graph using Neo4j and mySQL.

Sep-Pres **Columbia University, Creative Machines Lab** — RA
- Designing a deep learning method for teaching a robot how to make the proper motions in response to visual signs of emotional speech
- Creating a realistic physics simulation of facial mesh deformation

Oct-May '18 **Axel Laboratory, Zuckerman Institute** — Research Assistant
- Implemented new deep learning techniques on neurological trial data from an experiment on place-cell activity conducted in the lab.
- Attempted to computationally model the olfactory system's representation of distance and time.

Fall 2019 **Computer Science Theory** — Teaching Assistant
- Holding weekly office hours, participating in an online forum by answering questions, and grading homework and exams.

Honors & Awards

2019 **ROScon Talk Acceptance** — Macau, China
Upcoming indsutry talk entitled "It Takes a Village to Build a Robot"

Dec'18 **NASA Micro-G NExt Winner** — Houston, Texas
Selected to test our tool at NASA's NBL for outstanding research paper and proof of concept. Successfully passed all of NASA's test cases.

2018 **Dean's List** — Columbia University
Awarded for GPA above 3.7

Projects

May-Aug '19 **ROS Ecosystem Databases**
Built a series of mysql and Neo4j databases on dependencies in the kinetic distribution of ROS, as well as all ROS code accessible on Github. Reconstructed snapshots of package relationships at earlier dates.

Jan '19 **Tensor Flow+LFADS (for research)** — Open-Source
Implemented code in Python and MATLAB for LFADS, a new neuroanalysis technique that uses RNN and deep learning to find causal factors in high dimensionality neuron spiking data.

Oct '18 **Hack Harvard** — FaceFeed
Wrote a C# and XML based program that runs a photo through the Azure Cognitive Face API and generates responses to quizzes based on the output.

Extra-Curricular

2018-pres **Columbia Space Initiative, CS Mission Lead**
Leading a team of ten students in the NASA-SUITS design competition, in which we are creating an augmented reality user interface for NASA's next generation space suits using Unity and C#.

2018-pres **Association for Women in Mathematics, Treasurer**
Managing the Club budget, organizing monthly general body meetings and bi-weekly events to support women in mathematics.