Brianna Kozemzak

Seeking full-time employment as a Software Engineer.

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Education

Stanford University — *Palo Alto, CA*

Academic M.S. in Biomedical Informatics — *Sept. 2017 - June 2019*

GPA: 3.44/4.00

Saint Mary's College — *South Bend, IN*

B.S. in Computing and Applied Mathematics — *Aug. 2013 - May 2017*

GPA: 3.99/4.00

Research

Analysis of Variant Calling using Graph-Based Reference Genomes

Palo Alto, CA

Research under Euan Ashley, Stanford University — *June 2017 - Present*

- Developing a pipeline for simulating variants into existing human genomes to create a better ground truth for variant identification.
- Benchmarking the performance of variant callers against linear and graph-based reference genomes for variants of different sizes.

Detection of Prostate Lesions using an Efficient Neural Network

Palo Alto, CA

Research under Imon Banerjee, Stanford University — *April 2018 - Present*

- Created a model that outputs a probability map of pixel tumor character by downsampling images through layers of convolution and max pooling and then upsampling them through convolutional transpose layers and max unpooling using Pytorch.
- Improved lesion detection and unified models by performing shape-based alignment of images from three different MRI modalities.
- Preparing for publication.

Cluster Validation for Autism Subtypes

Palo Alto, CA

Research under Dennis Wall, Stanford University — *Sept. 2017 - Dec. 2017*

- Analyzed soft k-means clustering results generated using a Generalized Low Rank Model with logistic loss on autism phenotype data.
- Tracked the movement of individuals between clusters as the number of clusters increased to assess their biological meaningfulness.
- Visually presented the significant findings of the analysis using a Jupyter notebook built on the existing analysis pipeline.

Projects

Heap Allocator

Palo Alto, CA

Computer Organization & Systems Course Project — *March 2018*

- Implemented both an implicit heap allocator and an explicit heap allocator with custom malloc, realloc, and free functions in C.
- Augmented a test harness by adding methods for validating a heap structure after each call to the explicit or implicit allocator.

Photo Sharing Application

Palo Alto, CA

Web Applications Course Project — *May 2018 - June 2018*

- Developed a single page web application for sharing, commenting on, and favoriting photos using the MEAN stack.
- Adhered to a MVC architecture and included session management with the notion of a user being signed in.

Sequence Aligner

South Bend, IN

Senior Comprehensive Project at Saint Mary's College — *Aug. 2016 - Dec. 2016*

- Delivered three public presentations on the mathematical foundations of pairwise and multiple sequence alignment algorithms.
- Implemented Needleman-Wunsch and Smith-Waterman sequence alignment algorithms in python using NumPy.

Awards

2017 **Graduate Research Fellowship**, National Science Foundation

2017 **Valedictorian**, Saint Mary's College

2016 **Elizabeth Lin Lo Award**, Mathematics and Computer Science Department, Saint Mary's College

2015 **PRISM Women Scholars Program**, National Science Foundation

2015 **Student Independent Study and Research (SISTAR) Grant**, Center for Academic Innovation, Saint Mary's College