Nicholas H. Majeske

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EDUCATION

Master of Science: **Computer Science** **2017 - 2018**
Research: **Machine Learning, High Performance Computing, Bioinformatics**
Cumulative GPA: **3.67/4.00**
Graduation Date: **December 2018**
Completion of MS Fast Track Program

Bachelor of Science: **Computer Science** **2013 - 2017**
Research: **High Performance Computing, Bioinformatics**
Cumulative GPA: **3.66/4.00**
Completion of BS Honors and Acceptance to MS Fast Track Program

SCHOLARSHIPS AND AWARDS

1st Place - Biosurveillance App Development Competition **August 2018**
Pacific Northwest National Laboratory, National Security Intern Program.

Track Global Fellowship in Computer Science **June 2018**
Western Washington University.

Enhancement of Graduate Research Grant **May 2018**
Western Washington University.

Kaiser-Borsari Educational Foundation Scholarship **June 2017**
Western Washington University.

PUBLICATIONS

Majeske, N., Jagodzinski, F., Hutchinson, B., & Islam, T. (2018). Low Rank Smoothed Sampling Methods for Identifying Impactful Pairwise Mutations. *Proceedings of the 2018 ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics - BCB 18*. doi:10.1145/3233547.3233714

Majeske, N., & Jagodzinski, F. (2018). Elucidating Which Pairwise Mutations Affect Protein Stability: An Exhaustive Big Data Approach. *2018 IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC)*. doi:10.1109/compsac.2018.00078

RESEARCH EXPERIENCE

Scalable Exhaustive Protein Mutation Analysis **January 2017 - Present**
Western Washington University.

- Generalizing and scaling exhaustive analyze for protein mutations of n mutation sites.
- Extending third-party software to remove intermediate IO and enhance scalability.
- Studying parallel compression methods to further reduce IO for file outputs.
- Generated and analyzed all possible paired-site protein mutations in-silico.
- Implemented distributed-memory parallel system scaled to 1300+ compute cores.
- Derived metrics to reduce dimensionality and visualize effect of paired-site mutations.
- Published work in IEEE Compsac'18

Approximation Algorithms for Intractable Protein Mutation Analysis **January 2018 - Present**
Western Washington University.

- Extending research into more advanced sampling and matrix approximation methods.
- Further developing AIM matrix reconstruction to capture outlier mutation sensitive sites.
- Studying additional sampling methods and their effectiveness across multiple proteins.
- Performed pilot study and found AIM matrices to be approximately low rank.
- Used low rank reconstruction to approximate AIM matrices at fraction of computational cost.
- Developed sampling methods that improved AIM matrix approximation for multiple proteins.
- Published work in ACM BCB'18

Machine Learning Research Group **September 2017 – Present**
Western Washington University.

- Collaborate in a team researching applications of machine learning to bioinformatics.
- Topics of Weekly Literature Review: Convolutional Neural Networks, Recurrent Neural Networks, Generative Adversarial Networks, and Reinforcement Learning.

WORK EXPERIENCE

National Security Intern - Biosurveillance App Development Competition **June – August 2018**
Pacific Northwest National Laboratory, National Security Intern Program.

- Acted as project lead in developing android app to reduce exposure risk for aerosolized agents.
- Implemented distributed parallel system to derive synthetic aerosol dispersion data for training.
- Predicted and visualized dispersion of aerosolized agents in real-time using a deep neural network.

Computer Vision Laboratory Technician **July – September 2017**
Road-IQ of Modis Engineering LLC.

- Collected and labeled images of vehicles in the "blind spot" zone using MATLAB.
- Trained vehicle detection using MATLAB Aggregate Channel Feature Detector (ACFD).
- Created ground-truth video files for testing object detection performance of ACFD.

Project Developer Intern **April – June 2017**
DealsOnlyWebStore.

- Wrote PHP program to load and update a company's inventory daily for drop shipping.
- Developed minor interfaces for back-end tools using JQuery and PHP.
- Created unit tests for new features; developed under SCRUM and git version control.

PROGRAMMING LANGUAGES & TECHNOLOGIES

Java, C, C++, Bash, Python, Powershell, SQL, PHP, MPI, OpenMP, Git, UNIX, Windows