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Education

- **University of Washington** *Seattle, WA*
  *B.S. in **Computer Science**, **Bioengineering**, and **Applied Math**; GPA: 3.82* June 2021
  - Honors: Dean's List (all quarters), Stratos–Stephen Endowed Scholar, Robert B. Rodal Endowed Scholar

Skills

- **Languages**: Java, Python, MATLAB, R, LaTeX. *Experience with* HTML/CSS, JavaScript, C/C++, SQL

Experience

- **Undergraduate Researcher** *Apr 2020 – Present*
  University of Washington Biomedical Informatics & Medical Education Seattle, WA
  - Performed an exploratory temporal analysis on tweets related to COVID-19 via LDA topic modeling with gensim
  - Applied latent profile analysis on topic frequencies in various geographical regions to identify similarities and differences in content over time among areas in the United States

- **Research Intern** *Aug 2019 – Present*
  NanoString Technologies Seattle, WA
  - Refined the accuracy of precise UV light illumination on complex input masks through algorithm development in MATLAB to improve the digital spatial profiling technology in the GeoMX device line
  - Modeled light interactions with various external noise additions to locate and reduce 20% of noise artifacts
  - Improved time complexity of existing algorithm from $\mathcal{O}(n^2)$ to $\mathcal{O}(n \log n)$ by replacing the built-in convolution function with Fast Fourier Transform operations

- **Undergraduate Researcher** *Jan 2019 – Jun 2019*
  University of Washington Biomedical Informatics & Medical Education Seattle, WA
  - Built an interactive and dynamic visualization dashboard via D3 and React to display temporal data collected from digital health interventions for the use of clinicians
  - Experimentally identified an optimal clustering algorithm and set of hyperparameters for the data, with an average cluster coherence (via silhouette score) 15% higher than other algorithms

- **Undergraduate Researcher** *Sep 2018 – Present*
  Yager Lab, University of Washington Bioengineering Seattle, WA
  - Modeled 3-D diffusion of biomolecules into hydrogels in aqueous solution through Python and COMSOL to guide design of colon-targeted hydrogels to remove uremic toxins
  - Increased throughput of hydrogel production method by a factor of 96 via utilization of custom well plate dripper

- **Undergraduate Researcher** *Jun 2018 – Mar 2019*
  Dey Lab, Fred Hutchinson Cancer Research Center Seattle, WA
  - Identified four bacterial indicators of colorectal cancer by analyzing coincidence with various gut microbiome metagenomes in Python and R
  - Explored multiomic datasets to discern influencing factors, such as proteins and genes, in bile acid metabolism

- **Data Analysis Intern** *Jul 2017 – Aug 2017*
  IslandWood Bainbridge Island, WA
  - Proved an absence of bias by analyzing relationships between race/income and camp attendance across 10 years of demographic data via multivariate analysis, ANOVA, and correlation tests in R
  - Recommended solutions to community access problems in final presentation to IslandWood board of education

Publications

A. T. Chen, J. H. Chang, **S. Hallinan**, and D. C. Mohr, "Mapping User Trajectories: Using Participant Flows to Examine Behavior and Outcomes in Digital Health Intervention Data", presented at the Visual Analytics in Healthcare, 2019 (in conjunction with IEEE VIS 2019)

Coursework

- **Computer Science**: Data Structures and Parallelism, Algorithms, Machine Learning, Programming Languages, Hardware Software Interface, Software Design and Implementation
- **Mathematics**: Linear Algebra, Discrete Mathematical Modeling, Computational Methods for Data Analysis