

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, L^AT_EX. *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
 - 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 Information* 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