Lee Organick

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EDUCATION

UNIVERSITY OF WASHINGTON

PhD Computer Science and Engineering
Expected June 2023 | Seattle, WA
Cum. GPA: 3.84

MS Computer Science and Engineering
June 2019 | Seattle, WA

BS Molecular, Cellular, Developmental Biology
Interdisciplinary Honors
June 2015 | Seattle, WA

COURSEWORK

GRADUATE

Computational Biology
Synthetic Biology
Principles of Databases
Data Visualization
Systems & Architecture
Artificial Intelligence
Human Computer Interaction

UNDERGRADUATE

Python Data Programming
Genetics
Probability and Statistics

SKILLS

ANALYSIS

Advanced:
Python
Proficient:
R
Familiar:
PostgreSQL • Datalog • C++ • D3

LAB WORK

Expert:
Next-Gen Sequencing • Library Prep
Proficient:
Nanopore sequencing • Mouse Work

AWARDS

2019 Milotte Scholarship
2017-2018 Molecular Systems Lab Fellowship
2014 Mary Gates Research Scholarship
2013 Mary Gates Research Scholarship

RESEARCH

MOLECULAR INFORMATION SYSTEMS LAB (MISL) | Ph.D. Student / Research Scientist / Lab Manager

Sept 2015 – Present | University of Washington
I currently develop ways to use synthetic DNA to perform tasks traditionally done by silicon computers, i.e. DNA data storage. My work involves collaborations with international groups, Microsoft, and scientists from many fields; lab protocol development, DNA sequence analysis and data visualization. Past responsibilities incl. setting up the lab, developing wet-lab protocols as the first full-time employee.

ADAPTIVE BIOTECHNOLOGIES | Summer Intern

June 2021 - Sept 2021
I worked with the External Comp Bio team to analyze, visualize, and present proprietary data internally. By the end of the internship I had built a flexible pipeline in R to repeat the analyses on future large, complex datasets.

SECURITY AND PRIVACY RESEARCH LAB | Research Scientist / Ph.D. Student

Oct. 2016 – 2018 | University of Washington
I worked closely with P. Ney, K. Koscher, Y. Kohno and L. Ceze to expose and find solutions to security flaws at the intersection of biology and computer security.

TEACHING AND OUTREACH

MISL OUTREACH | Co-founder | Jan 2020 – Present

• Developed and co-wrote MISL's formal outreach web page (in progress) • Since 2017 averaged one outreach event per week during the school year

MOLECULAR INFORMATION SYSTEMS | Teaching Assistant

Apr 2020 - Jun 2020 | CSE 599X
• Set up course website • Advised student projects outside lectures

PYTHON DATA PROGRAMMING | Teaching Assistant

Apr 2015 – Jun 2015 | CSE 160
• Taught one section per week • Held weekly office hours • Graded weekly homework and quizzes • Designed and graded portions of exams

NEUROSCIENCE OF SEX | Peer Teaching Assistant

Apr 2014 – Jun 2014 | HONORS 222
• Worked closely with instructor to develop curriculum and choose readings • Graded weekly assignments • Assisted students during and after class

SELECTED PAPERS

L. ORGANICK et al. "An Empirical Comparison of Preservation Methods for Synthetic DNA Data Storage." Small Methods (2021).

L. ORGANICK et al. "Probing the Physical Limits of Reliable DNA Data Retrieval." Nature Communications (2020).

L. ORGANICK et al. "Random Access in Large-Scale DNA Data Storage." Nature Biotechnology (2018).

Y. J. Chen, C. Takahashi, L. ORGANICK, et al. "Quantifying molecular bias in DNA data storage." Nature Communications (2020).

P. Ney, K. Koscher, L. ORGANICK, L. Ceze, and Y. Kohno. "Computer Security, Privacy, and DNA Sequencing: Compromising Computers with Synthesized DNA, Privacy Leaks, and More." 26th USENIX Security Symposium (2017).