# HARPER HULTS

**Computational Scientist, Designer, Communicator**

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## EXPERIENCE

### Mathematics Research Assistant

*University of Washington Bothell*

March 2022 – Ongoing

- Reviewed literature & identified open problems to pursue in the field of Tiling Theory.
- Formulated a research plan and led a team of 3 student researchers to apply symbolic dynamical systems theory to Penrose tilings.
- Communicated results at various poster sessions and conferences.

### Machine Learning Research Assistant

*University of Washington Bothell*

September 2022 – December 2022

- Restored a deprecated codebase of $\sim 10,000$ lines of code.
- Conducted validation testing on a Self-Attention Generative Adversarial Network for Computed Tomography (CT) Image Reconstruction.

### Grader for Data Structures

*University of Washington Bothell*

January 2022 – Ongoing

- Analyzed student code for correctness and efficiency.
- Applied shell scripts to carry out validation testing of student code.

### Club President

*UWB Math Society*

September 2021 – June 2022

- Planned and conducted meetings to connect club members with alumni and the greater mathematical community.

### STEM Tutor

*Self-employed*

September 2018 – Ongoing

- Diagnosed gaps in knowledge and comprehension.
- Constructed curriculums in order to cultivate subject understanding.

## EDUCATION

### Bachelor of Science in Mathematics and Computer Science

*University of Washington Bothell*

Expected June 2023 GPA: 3.9

- Thomas Sedlock Icon Scholar
- Mary Gates Research Scholar

### Associate of Science

*Seattle Central Community College*

June 2020 GPA: 3.6/4.0

## PUBLICATIONS & TALKS

### Preprints

- Hults, H., Jitsukawa, H., Mann, C., & Zhang, J. (2023a). A Symbolic Dynamical System for the Penrose Wang Shift. *arXiv*. (Coming soon to an arXiv near you!)

### Conference Talks

- Hults, H., Jitsukawa, H., Mann, C., & Zhang, J. (2023b). *A symbolic dynamical system for the Penrose Wang shift*. Presented in the AMS Contributed Paper Session on Dynamical Systems and Ergodic Theory, and Difference and Functional Equations.
- Hults, H., Jitsukawa, H., Mann, C., & Zhang, J. (2022). *A Markov partition for the Penrose shift*. Presented at the Northwest Undergraduate Mathematics Symposium. (**Awarded Best Talk**)

## SKILLS

Deep Learning | Modeling | Data Visualization | Optimization | Cloud Computing | Git | Linux

Empathetic Leadership | Big Picture Thinking | Active Listening | Communication | Visual Design

Python | C++ | Java | MATLAB