

Shen Wei Brendan Looi

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I am a senior undergraduate in Applied Mathematics at Colorado State University. I have a passion for mathematics and programming, whilst using mathematical concepts to improve and optimize our world in a progressively digital world.

Education

Colorado State University

Fort Collins, CO

○ *Bachelor of Science in Mathematics, Concentration in Applied Mathematics – Computer Science* Graduating May 2021

- **Relevant Mathematics Coursework:** Fourier and Wavelet Analysis, Numerical Analysis, Abstract Algebra, Ordinary/Partial Differential Equations, Advanced Calculus of One Variable, Projects in Applied Mathematics
- **Relevant Computer Science Coursework:** Software Development, Information and Coding Theory, Post-Quantum Cryptography, Mathematics of Information Security, Data Structures, Discrete Structures

Research Experience

Clebsch Map Modeling of Cubic Surfaces

Colorado State University

○ *Department of Mathematics – Dr. Anton Betten*

Jan 2020 – May 2020

- Developed novel solutions for optimizations of non-trivial implicit surface modeling
- Probing surface representation spectra for real world applications including cryptography and tessellation
- Worked in Maple, MATLAB, Python, and C++

Visualization and Quantization of Implicit Surface

Colorado State University

○ *Department of Mathematics – Dr. Anton Betten*

Aug 2020 – Dec 2020

- Exploration of exotic mapping methodologies for physical data visualization and surface property characterization
- Optimized tools for topological analysis of compute heavy implicit surfaces
- Applied ideas from Coding Theory, Differential Geometry and Group Theory

Technical Skills

○ Programming Languages and Frameworks:

- Languages: Bash, C, Matlab, Maple, C++, Java, JavaScript, Python, \LaTeX , Haskell
- Frameworks: Android API, Sagemath

○ Mathematical Skills:

- Able to recognize shifting priorities within theoretical problems and their applications
- Advanced ability to utilize software to solve problems within the scope of mathematics
- Quickly and efficiently apply different concepts within mathematics to real-world problems

Ongoing Projects

○ Comparing Fast Fourier Transform Algorithms for Beamforming

- Researching the most efficient FFT Algorithms in real world applications of beamforming as used in 5G and WiFi 6.
- Working with peers in a electrical engineering department to apply objectives directly to hardware