

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, specifically where mathematical concepts are used to improve and optimize our increasingly 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 electrical engineering to apply objectives directly to hardware
 - Comparing digital communication methods using Python, MATLAB and Maple