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 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 tessalation
  - 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