Fred Choi

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Education

Rensselaer Polytechnic Institute | Bachelor of Science in Computer Science and Mathematics ***May 2020***

- **GPA: 4.0**
- Coursework: Advanced Computer Graphics, Operating Systems, Introduction to Algorithms, Principles of Software, Probability Theory and Applications, Introduction to Topology, Linear Algebra, Advanced Calculus, Foundations of Computer Science, Computer Organization, Differential Equations, Number Theory, Data Structures

Software

- Expert in: JavaScript, Java, Typescript, C++, C#, Python
- Experienced with: HTML, CSS
- Versioning: Git/GitHub
- Libraries: jQuery, jQueryUI, Node.js, .NET

Mathematics

- Multivariable Calculus and Optimization
- Linear Algebra
- Formal Proofs (Set Theory, Topology, Number Theory)

Relevant Coursework

Advanced Computer Graphics ***Spring 2019***

- Learned and implemented algorithms for: transformations, meshes, subdivision, rigid body/cloth/fluid simulation, inverse kinematics, ray tracing, illumination, photon mapping, subsurface scattering, graphics pipeline, GLSL shaders, Perlin noise.

Introduction to Algorithms ***Fall 2018***

- Mathematical tools for designing and analyzing algorithms, and computational complexity.
- Algorithm techniques such as dynamic programming, greedy algorithms, divide-and-conquer, and backtracking.

Principles of Software ***Fall 2018***

- A study of important concepts in software design, implementation, and testing.
- Programming concepts: specification, abstraction with classes, design principles and patterns, testing, refactoring, GUI and event-driven programming, and cloud-based programming. Assignments and concepts taught are in the framework of Java.

Data Structures ***Fall 2017***

- Programming concepts: trees, binary search trees, associative structures.
- Algorithms: searching and sorting, generic algorithms, iterative and recursive algorithms. Methods of testing correctness and measuring performance. Assignments and concepts taught are in the framework of C++.

Experience

Software Engineering Intern | Wayfair ***June 2019 – August 2019***

- Built new features and improved upon the Wayfair website. Specifically worked on parts related to the Wayfair credit card and financing options. Worked with full stack technologies (PHP, Javascript, CSS, Git, etc.).

Interactive JS | Self-Directed ***June 2017 - Present***

- **http://fred-choi.com/InteractiveJS/docs/examples/**
- InteractiveJS is a set of tools to make dynamic, interactive visualizations of various concepts in mathematics. Written in JavaScript with jQuery, it is embeddable in any webpage, making it ideal for teaching, visualizations, and figures embedded in technical literature. A good geometric intuition is the best way to learn mathematics. Interactive JS aims to bring this to everyone.

Lead Research Assistant | Culturally Situated Design Tools ***September 2017 - May 2018***

- Create webapps in JavaScript designed to help bring STEM to grade-school students in a relatable and easy to learn manner. Incorporates principles of web design (HTML and CSS), graphic design, game design, and teamwork.