Fred Choi

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Education

Rensselaer Polytechnic Institute | Bachelor of Science in Computer Science and Mathematics ***Sep. 2017- May 2020***

- **GPA: 4.0**
- Coursework: Machine Learning From Data, Computational Vision, Programming Languages, 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: Typescript, JavaScript, Java, Python, C++, C#
- Experienced with: Haskell, HTML, CSS
- Versioning: Git/GitHub
- Libraries: React, jQuery, Node.js, OpenCV, OpenGL

Mathematics

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

Relevant Coursework

Machine Learning From Data ***Fall 2019***

- Lays down a solid theoretical framework for learning from data. Main points include: how well we can predict outside the data we were given, and how we can set up the problem to get the best possible result. Specific techniques include the perceptron, linear regressions, neural networks, etc.

Computational Vision ***Fall 2019***

- Covers various techniques in computer vision, including edge detection, segmentation, detection, and tracking. Techniques covered include: transforms, graph cuts, convolutional neural networks. Tools used: Python, numpy, OpenCV

Advanced Computer Graphics ***Spring 2019***

- Research and implement 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.

Principles of Software ***Fall 2018***

- Ensure long-term stability and maintainability of software through a study of important concepts in software design, implementation, and testing.

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 | Research ***June 2016 - Present***

- **http://fred-choi.com/InteractiveJS/docs/examples/**
- InteractiveJS is an ongoing project that aims to create interactive illustrations of mathematics that can easily be embedded in any webpage. Written in TypeScript with three.js. Teachers and authors can use this tool to help students visualize concepts in order to build a good geometric intuition that is foundational to learning mathematics.

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

- CSDT makes learning accessible to students around Troy, NY by creating interactive, culturally-aware applications to better engage the students and foster a deeper interest in STEM. Specifically worked on Rhythm Wheels, which embedded concepts such as GCD and modular arithmetic in an interface where kids can assemble complex rhythms by simply dragging and dropping beats onto wheels.