Raymond Liu

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Education

Princeton University, Princeton, NJ Fall 2019 – Present

Major: Computer Science - in-major GPA: 4.00
Cumulative GPA: 3.89
Relevant coursework:
Intro to Machine Learning, Computer Vision, Mathematics for Numerical Computing and Machine Learning, Algorithms and Data Structures, Computer Architecture

Oregon State University, Corvallis, OR Fall 2014 – Spring 2019

Cumulative GPA: 4.00 (75 credits as a non-degree student)
Relevant coursework:
Vector Calculus, Differential Equations, Linear Algebra
Intro to CS 1 and 2, Data Structures, Digital Logic Design
General Physics with Calculus 1, 2, and 3

Crescent Valley High School, Corvallis, OR Fall 2016 – Spring 2019

Cumulative GPA: 4.00

Skills

Proficient in C++ and C
Proficient in Python
Proficient in Java
Proficient in HTML, CSS, JavaScript, JQuery
Proficient in Git
Proficient in LaTeX

Familiar with Bash
Familiar with OCaml
Familiar with ARM and MIPS assembly
Familiar with SQLite and PostgreSQL

Honors, Awards, and Achievements

Qualified for USA Junior Math Olympiad (One of 156 qualifiers worldwide) Apr 2018

Qualified for American Invitational Mathematics Examination 2016-2018

Oregon Invitational Mathematics Tournament - 3rd Place (Team Event) May 2018

Oregon Invitational Mathematics Tournament - 4th Place (Calculus) May 2017

Intel Northwest Science Expo (NWSE) Finalist Apr 2017

IEEE Excellence in Computer Science Award at Intel NWSE Feb 2017

Central Western Oregon Science Expo (CWOSE) Finalist Feb 2017

Yale Science and Engineering Award in Computer Science (at CWOSE) Feb 2017

Work/Research Experience

Research Project at Princeton University — June 2021 – Present

Joined the Laboratory for Intelligent Probabilistic Systems under Dr. Ryan Adams. Developed a system for visualizing generative models in 3D hyperbolic space. Created a projection of the Poincaré disk model in 3D space using OpenGL and connected the model with a GAN for generating correlated images based on geodesic distance. Work is ongoing.

Teaching Assistant at Princeton University — Sep 2021 – Present

TA for COS340 - Reasoning about Computation.
Course content covers mathematical and theoretical topics in computer science, including combinatorics, probability, graph theory, NP-completeness, cryptography.
Guided students during regular office hours and answered questions on the course's online forum
Graded and provided feedback for assignments and exams

Research Assistant at Princeton University — June 2020 – Aug 2020

Joined the Princeton Vision & Learning Lab to work on a visual learning project on optical flow. Developed and optimized a system for collecting human-annotated images and predicting ground truth optical flow from annotation pairs.

Research Intern at Oregon State University — July 2019 – Aug 2019

Joined a visual learning project designed to help provide insight into how neural networks make decisions based on meaningful visual concepts
Learned basics of neural nets, helped work on the network using images of birds and focused on visual concepts such as wings, eyes, and beaks

Computer Graphics Internship at Oregon State University — June 2018 – Aug 2018

Designed a simple ray tracer / image renderer from scratch using C++
Tested and implemented a variety of methods to increase image realism and accelerate rendering speed

Teaching Assistant at Oregon State University — Sept 2017 – Mar 2018

TA for CS162 - course content includes C++ programming, data structures, algorithms, polymorphism and inheritance.
Guided students during regular office hours and on Canvas
Graded and provided feedback for projects and labs

Dementia Diagnosis Project — Feb 2016 – Sep 2017

Continued prior work on developing a method for diagnosing Alzheimer's disease using convolutional neural networks.
Implemented a technique for processing 3D MRI scans to improve the stability and accuracy of the existing neural network.
Submitted project to the Intel Science and Engineering Fair.

Misc. Computer Science Projects

Aug 2017 – Present

- Designed and developed a web interface that allows users to automatically block advertisements in podcasts
- Designed and developed a mobile app using C# and the Unity game engine that allows users to interact with search trees
- Developed an interactive text-based game using C++ where the user plays as a Union soldier in the Civil War. Mostly historically accurate.
- Built and trained a convnet from scratch using CIFAR10 images

Official Testing

AP U.S. Government & Politics	5	May 2019
SAT Math / Reading & Writing	800 / 750	Aug 2018
SAT Physics Subject	800	June 2017
SAT Math II Subject	800	May 2017
AP Physics C: Mechanics	5	May 2017
AP Physics C: Electricity & Magnetism	5	May 2017
AP Calculus BC	5	May 2016

Hobbies

Ping Pong (semi-professional)

I've played at several U.S. national tournaments, as well as many state and local tournaments in Oregon (and I even won a few). My USATT rating is currently 2059.

I was previously a coach for Oregon State University's ping pong club.

White Water Rafting

I've rafted at several locations, including McKenzie River (Oregon), Clackamas River (Oregon), and Flathead River (Montana). I'm experienced at up to class IV rapids.

Rock Climbing

Occasionally went rock climbing at Dixon Recreation Center, Oregon State University.