Raymond Chang

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Education

- **Oxford University** — Oxford
  DPhil in Computer Science — Oct 2024 - Present
  - Supervisors: Standa Zivny, Christian Coester

- **Cornell University** — Ithaca, NY
  M. Eng. & B.A. — Sep 2020 - May 2024
  - Masters: Computer Science
  - Bachelors: Computer Science and Mathematics
  - GPA: 4.0. Dean's List (6/6 semesters)

Skills

- **Tools and Technologies:** Pytorch, Numpy, OpenCV, Jupyter/Colaboratory, Linux, Git

- **Programming Languages:** Python, C++, Julia, OCaml, Java, C$^\sharp$, LaTeX, HTML, JavaScript, SQL

- **Relevant Coursework:** Data Structures, Analysis of Algorithms, Probability, Statistics, Machine Learning (Natural Language Processing), Operating Systems, Object-Oriented Programming.

Work Experience

- **NSF-Sponsored Intelligent and Scalable Systems REU** — Bethlehem, PA
  Undergraduate Researcher, Professor Mooi Choo Chuah — Jun - Aug 2023
  - Spearheaded development of a target-driven visual navigation system for autonomous underwater vehicles in simulation using transfer learning.
  - Fine-tuned the object detection model YOLOv5 on a low-light image dataset, improving max F1 score from 0.57 to 0.68.
  - Built an underwater simulation environment in Unity and implemented deep reinforcement learning algorithms such as Proximal Policy Optimization.

- **Cornell University** — Ithaca, NY
  Undergraduate Researcher, Professor Z. Jane Wang — Sep - Nov 2021, Jun - Aug 2022
  - Processed and analyzed footage of insect flight by tracking body and appendage locations through the application of object trackers and deep learning methods.
  - Performed background subtraction, thresholding, and contour detection on video datasets using OpenCV.
  - Analyzed and solved ODE equations modeling insect body and wing motion during flight in MATLAB.

- **Cornell University** — Ithaca, NY
  Teaching Assistant — Feb 2021 - June 2024
  - Designed and built a coding assignment on text retrieval methods, leading a team of 10 undergraduate teaching assistants. Developed an auto-grader to automatically test student submissions.
  - Devised and led exam review sessions with over 50 students in attendance.
  - Mentored students on semester-long projects, offering technical advice and helping groups collaborate effectively. Projects included a melody generator and restaurant recommendation systems.
  - Served as a teaching assistant for a variety of courses such as Functional Programming, Language and Information, and Analysis of Algorithms.

Projects

- **Puzzle Platformer Game** — Ithaca, NY
  Software Lead — Jan - May 2022
  - Led the development of a mechanically rich puzzle platformer game in Java using LibGDX with an 8-person team, operating under 2-week Scrum sprints.
  - Designed and presented the architecture specification, following the model-view-controller pattern, as well as other design documents.
  - Built the level editor from scratch using the Python Tkinter GUI library.

- – Managed the workflow, delegated tasks, enforced deadlines, and led team meetings.
- **Terrain Generation** Ithaca, NY
  Software Developer *Aug - Dec 2022*
  - – Built an application that converts a user-painted heightmap into 3D terrain using C++ with SDL2 and OpenGL in a 4-person team.
  - – Implemented features such as wispy clouds, water reflection, normal mapping, and swaying grass blades through the OpenGL shader pipeline.
  - – Project can be found on Github: https://github.com/mjguynn/terrapainter