Lillian Huang

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RESEARCH INTEREST

I want to develop graphics applications that save artists time and effort without forfeiting creative control. Computer vision methods are key components in implementing these tools, as visual understanding is necessary to achieve this goal. Combining this approach with my artistic background helps me design effective, user-focused tools.

EDUCATION

University of Maryland, College Park — August 2018 – Present
(Pursuing) Ph.D. in Computer Science — GPA: 3.968

University of Michigan, Ann Arbor — September 2014 – April 2018
B.S. in Physics, Honors — GPA: 3.903
B.S. in Computer Science

RESEARCH EXPERIENCE

Graduate Research Assistant *University of Maryland* — January 2019 – Present
<u>Current:</u> My research focuses on video interpolation for hand-drawn animation, or computer vision-aided "in-betweening." One of our main challenges with this project is that the sparse visual nature of our domain gives less information to find correspondences for object tracking. We implement a number of deep learning modules and novel loss terms in our training criterion to accommodate these difficulties. Our other challenge is that there are no standard datasets for this domain, which we are in the process of overcoming by generating a synthetic "hand-drawn" animation interpolation dataset using Blender and Python.

<u>Previous:</u> I previously worked on few-shot recognition (image recognition using only a few training samples). We made improvements on baselines by generating salient few-shot samples from the existing samples to augment training data. We presented a poster with our findings at the Women in Machine Learning workshop at *NeurIPS* (see Publications, entry #1).

Undergraduate Research Assistant *University of Michigan* — August 2017 – July 2018
Our research in theoretical astrophysics imagined what might happen if we tweaked the process that turns helium into carbon, an element necessary for life. We ran simulations to see if these changes would allow life to exist as it does now.

- Analyzed and visualized results using various mathematical methods in Pythons
- Published results in a first-author journal paper (see Publications, entry #2)

Summer Student Researcher *NSF REU Program at CERN* — June 2017 – August 2017
Created a new, modularized release management system for the centralized file system at CERN.

- Implemented a prototype for this new system using Docker, replacing the virtual machines in the old system
- Created redundancy by putting data in a cloud instead of individual computing nodes

Student Engineer *Open Storage Research Infrastructure (OSiRIS) at University of Michigan* — May 2016 – August 2016
Did systems engineering for an NSF-funded storage infrastructure project called OSiRIS, which aims to create storage infrastructure that facilitates data sharing and storage between separate institutions.

- Collected, stored, and visualized performance metrics for the system
- Used Ceph, Grafana, and Kibana to improve systems metrics acquisition

Undergraduate Research Assistant *University of Michigan* — May 2015 – August 2015
Used machine learning to recover lost neutrino data in experimental particle interactions, as neutrino information is not picked up by most detectors.

- Implemented and trained a neural network from scratch to recover neutrino data from detected particle data
- Published method in a second-author journal paper (see Publications, entry #3)

TEACHING EXPERIENCE

Teaching Assistant *University of Maryland* — August 2018 - December 2018
Undergraduate Discrete Math
Led an hour-long discussion section twice a week, held office hours, graded homework assignments and exams

LEADERSHIP AND OUTREACH

Graduate Student Council *University of Maryland CS Department*   August 2021 – Present

- Organize a student-led grad-to-grad peer mentorship program
- Pair mentors and mentees for year-long partnerships
- Coordinate, prepare, and present workshops on topics relevant to graduate student life

Club Synchronized Swimming Council *University of Michigan*   August 2017 – April 2018

- Organized fundraising efforts
- Coordinated volunteering and competitive events for the team

SKILLS, LANGUAGES, AND TOOLS

Proficient: Python, Bash, PyTorch
Familiar: C++, C, C#, Git, Blender, Maya

AWARDS

National Science Foundation Graduate Research Fellowship (NSF GRFP)   2020 – Present

National grant awarded to ∼2000 graduate students annually; $37k per year for 3 years

Gloria Wille Bell and Carlos R. Bell Scholarship   2014 – 2018

Scholarship awarded to ∼5 undergraduate STEM students per year at University of Michigan; $10k per year for 4 years