



Kaiyuan WANG  
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## SUMMARY

I'm a first-year Master's student in computer science at UCSD with a passion for research. I'm on the depth track of deep learning and vision, and I'm looking for a research internship/volunteering opportunity during Summer 2023. I'm interested in topics about 3D deep learning and/or robotics.

## EDUCATION

**M.S IN COMPUTER SCIENCE, UC SAN DIEGO. GPA: 3.94/4.0** 2022-2024

**Coursework:** Convex optimization, Deep learning (3D data, generative model, vision), Unsupervised learning.

**B.S. IN COMPUTER ENGINEERING, UC SAN DIEGO. GPA: 3.75/4.0** 2018-2022

**Coursework** (advanced): Recommender systems, Probabilistic AI, Operating system, Network, Signal processing.

**Coursework** (fundamental): Algorithms and data structures, Linear algebra, Probability, Calculus.

## RESEARCH AND PROJECTS

**POINT CLOUD REGISTRATION USING CONVEX-RELAXATION ON  $SE(3)$**  Winter 2022

- Reproduced the paper *Convex Relaxations of  $SE(3)$*  by Horowitz et.al. using CVXPY framework.
- Compared the convex-relaxation method with SVD-based iterative closest-point. ([report](#))

**GENERATIVE MODEL FOR 2D IMAGES** Winter 2022

- Surveyed generative methods and text-to-image methods.
- Implemented and experimented with VAE ([code](#)) and convolutional GAN ([code](#)).

**RAY-TRACING RENDERER** Winter 2022

- Implemented ray-tracer renderer with acceleration structure in C++
- Implemented vertex shader using OpenGL framework.

**LEARNING-BASED 6D OBJECT POSE ESTIMATION** Fall 2022

- Implemented point cloud segmentation and keypoint prediction using PointNet
- Implemented iterative closest point algorithm for pose prediction ([code](#))

**RESEARCH INTERNSHIP AT PENGTAO XIE'S GROUP** Summer 2021

- Conducted survey on differentiable neural architecture search (DARTS) methods.
- Applied state-of-the-art DARTS method for blood cell image classification.
- Implemented data augmentation procedure for sample-efficient training.
- Deployed model training and evaluation pipelines onto kubernetes cluster. Increased GPU utilization from 20% to 80% by moving the data pipeline to ephemeral SSD.

## TEACHING ASSISTANTSHIP

**TEACHING ASSISTANT: CSE120 OPERATING SYSTEMS** Fall 2022, Spring 2023

- Set up course infrastructure: Automated grading and GitHub course repo management for 300+ students.
- Led discussion sections and prepared original instruction materials.
- Designed and graded exam questions.

**TUTOR: CSE120 OPERATING SYSTEMS** Winter 2021, Spring 2022

- Helped students with debugging and conceptual questions

## SKILLS AND EXTRA

**PROGRAMMING LANGUAGES:** *Experienced:* Python, Java | *Familiar:* C++, Bash, System Verilog

**FRAMEWORKS & LIBRARIES:** Pytorch, Jupyter, Open3D, Matplotlib, Numpy, Scikit-learn, Tensorflow, Kubernetes

**LANGUAGES:** *Fluent:* English | *Native:* Mandarin

**EXTRA:** I enjoy taking and sharing my notes. They are posted [here](#).

I like working out and playing basketball. [Here](#) is a GIF of me playing :)