

Haoyu Wei

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EDUCATION

- **Northwestern University** Evanston, IL
M.S. in Computer Science; GPA: 4.0/4.0 Sep. 2019 – Jun. 2021 (Expected)
- **Sichuan University** Chengdu, China
B.Eng. in Software Engineering; GPA: 86.7/100 Sep. 2015 – Jun. 2019
- **National University of Singapore** Singapore
Summer Workshop in School of Computing (in Cloud Computing & Big Data); Grade: A Jul. 2018 – Aug. 2018

RESEARCH EXPERIENCES

- **Graduate Research Assistant** Evanston, IL
Northwestern Comp Photo Lab Oct. 2019 - Present
 - Advised by Prof. Oliver Cossairt.
 - **Sparse-View Tomographic Reconstruction using Adversarial Inpainting Networks.**
 - Reconstruction of Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) images using highly undersampled data (around 1/10 of data available).
 - Developed novel network architectures and modules in reconstructing and removing streak artifacts in CT & MRI images and dynamic volumes with sparse-angle radial-encoded k-space data.
 - A paper in progress planning to submit to CVPR 2021.
 - **Light Field Rendering of Holograms on 3D Glass Display.**
 - Developed an end-to-end light field display system, which generates a continuous video of 30 frames with only 6 photos using a deep learning based light field depth estimation system. And displayed the rendered object on a 3D holographic display device.
 - The system is robust especially for non-lambertian surfaces such as holograms due to the nature of Multiplane Images (MPI).
 - Mentored an undergrad student to do extended experiments on this project.
 - **Uncalibrated Deflectometry with Mobile Devices on Extended Specular Surfaces.**
 - To identify the origin of Kokomo glasses in churches and museums, we developed ways to examine the texture patterns of the glasses using a portable device.
 - Assisted in experiment setup and normal map feature extraction and matching of glasses.
- **Undergraduate Research Intern** Chengdu, China
SCU DICA Lab Mar. 2018 - Jun. 2019
 - Advised by Prof. Jiancheng Lv.
 - **Lab Homepage Full Stack Development.**
 - Developed a website for the lab using Java Springboot. Functionalities include lab information display and a management system for internal use.
 - **A Comparative Study of Pneumonia Classification Algorithms based on CNN.**
 - Advised by Hao Yin.
 - Developed and compared results of 5 machine learning models for both binary and multiclass classifications of X-Ray images. The models include a 11-layer CNN model and 4 transfer-learning CNN models with different classifiers and structures. The result of the best performing model achieved over 95% accuracy comparable with state-of-the-art.
- **Undergraduate Research Intern** Shenzhen, China
Harbin Institute of Technology Shenzhen Graduate School Jan. 2018 - Mar. 2018
 - Advised by Prof. Chunkai Zhang.
 - Assisted in the research of *Over-Sampling Algorithm Based on VAE in Imbalanced Classification*, which aims to solve the imbalanced classification problem by using variational auto-encoder to fit the probability function of the minority samples without prior assumption, and reasonably expand the minority set.

SELECTED PROJECTS

- **Leader in project “Probe Data Analysis for Road Slopes”** Apr. 2020
 - Matching 3 million GPS points to 0.2 million road link industry raw data and calculating road slopes using matched data.
 - Applied hidden Markov model in the map matching part. By adapting Viterbi algorithm and some tricks, the processing time is improved by thousands of times compared to brute force.
- **Personal project “Ray Tracing and Physically-based Graphics Modeling”** Jan. 2020 - Mar. 2020
 - Two 3D WebGL-based projects written from scratch without libraries: 1. Physically based animation and modeling. Simulated tornados, boid flocking behavior, spring mass system, and different ODE solvers; 2. Ray Tracing and Ray Marching. Reflection and shadow effects of 3D objects.
- **Leader in project “Android Mirror Painting Application”** Mar. 2017 - Jun. 2017
 - Developed an Android app where users can draw on either side of the phone screen while automatically generating symmetrical paintings on the other side in real time, with all painting tools supported.
 - Responsible for Android front-end development and database design.

INDUSTRIAL EXPERIENCES

- **HUAWEI Technologies Co., Ltd** Chengdu, China
Big Data Engineer Intern, 2020 Research Lab Sep. 2018 - Dec. 2018
 - **Data Analysis:** Console performance analysis, optimization of Flow Tracing and Diagnosing System (FTDS) using Java and statistical analysis of FTDS manager.
 - **Documentation:** Compilation of FTDS user manual and development documents.
- **TOSIT Technologies Co., Ltd** Chengdu, China
Big Data Engineer Intern Mar. 2018 - Apr. 2018
 - Research in Big Data pipelines in industries.
 - Led a team to develop a streaming data pipeline which integrates Hadoop, Spark Streaming, Flume, Kafka, Zookeeper and Hbase.

ACTIVITIES & SERVICES

- **Reading Group on Approximation Algorithms** Evanston, IL
Northwestern University, Led by Prof. Samir Khuller Jun. 2020 - Sep. 2020
- **Department Leader** Chengdu, China
Alibaba Club, Sichuan University Oct. 2016 - Jun. 2019
- **English Teacher Volunteer** Chiangmai, Thailand
Ban Thabdua School Aug. 2017

AWARDS & HONORS

- **Outstanding Graduate** Jun. 2019
- **Nomination of Star Graduate of School of Software** May. 2019
- **Full Scholarship for NUS summer program** 2018
- **National English Competition for College Students(NECCS) - Second Price** 2017, 2018
- **The First Class Individual Scholarship** 2017 - 2018
- **The Second Class Scholarship (Top 10%)** 2016 - 2017
- **The Second Class Individual Scholarship** 2015 - 2016

PROGRAMMING SKILLS

- **Languages:** Python, Java, Javascript, C/C++, MATLAB

PERSONAL LINKS

- **GitHub:** <https://github.com/whywww>
Personal Website: <https://whywww.github.io/>