JIREN LI

jirenli2023@u.northwestern.edu | +1 626-726-1849

EDUCATION

Northwestern University (NU) Illinois, USA

M.Sc. Computer Engineering Sept. 2021– Dec. 2022 (expected)

- Current GPA: 3.86 / 4.00
- **Coursework:** Computer Graphics (A), CUDA (A-), Algorithms (A-), ML (A), DL (A), RL (A), AI, Computer Vision

Southwest Jiaotong University (SWJTU) Sichuan, China

B.Eng. Electronic Information Engineering Sept. 2017 – Jun. 2021

- Average Score: 87.17/100 | Major Average Score: 90.44/100 | Ranking: 6/128
- **Awards:** 2nd Class Prize in Sichuan Province, China Undergraduate Mathematical Contest in Modeling 2019
  1st Class Scholarship for Academic Excellence, SWJTU 2018, 2019

PUBLICATIONS & PATENTS

- Manuel Ballester, Heming Wang, **Jiren Li**, Oliver Cossairt, Florian Willomitzer, *'Interferometric single-shot ToF camera with submillimeter-scale resolution'*, submitted to CVPR 2023
- Jin Huang, **Jiren Li**, et al. *'A Land Use Type Recognition Method based on U-Net Neural Network'* CN Patent CN202011236409.5

RESEARCH AND COURSE PROJECTS

Machine learning based single-shot phase unwrapping method for Time-of-Flight camera | Research Project Apr. 2022 – Present

Computational 3D Imaging and Measurement Lab **| Instructor: Florian Willomitzer** Illinois, USA

- The project aim is to apply ML-based single shot phase unwrapping to a ToF measurement camera
- Designed a scene in Mitsuba renderer that generates Time of Flight and 3D object structured light phase maps as training data
- Engineered a CNN with encoder-decoder structure and a LSTM module, grouped the dataset according to phase map wavelengths and trained individual models to improve performance, rebuilt the original 3D objects' mesh model from the predicted phase

Intelligent Image Recognition for Land Use Type | Student Research Training Program Mar. 2019 – Apr. 2020

Chinese Research Institute of Land and Big Data **| Instructor: Jin Huang** Sichuan, China

- Devised a semantic segmentation model based on U-Net for land usage classification in twelve categories
- Embedded the network in encapsulated recognition software, which was utilized in the 3rd National Land Survey

Course Projects

- In **Programming Massively Parallel Processors with CUDA** course at **NU**, implemented Mini-Batch Gradient Descent using CUDA programming, and optimized the MBGD algorithm by applying two types of sample trimming methods
- In **ML: FAA** course at **NU**, used a decision tree to predict telco customers' churn and compared four ensemble learning methods
- In **Course Design for Information Processing** at **SWJTU**, I captured video stream of a real table and projected it onto a virtual table created in a virtual Unity3D environment for the purpose of interacting with users

INDUSTRY EXPERIENCE

LAMIdata Corporation, Limited | Algorithm Intern Sichuan, China

Grading System for Middle School Chemistry Experiment Mar. 2021 – Jun. 2021

- Collected and annotated video data from chemistry experiments and trained a YOLO model enabled to detect apparatus
- Applied a U-Net model, edge detection, corrosion and clustering algorithms to measure pH values of pH papers in videos
- Used model output to implement the grading program, connected the program to GUI software and transplanted the software to recording devices with the Redis database

Chinese Research Institute of Land and Big Data | Outsourcing Project Sichuan, China

Surveillance Video Detection of Safety Helmets Dec. 2019 – Jul. 2020

- Created software that alerts the supervisor of anyone not wearing a safety helmet.
- Applied Faster RCNN to detect helmets and recalculated proposal scores in consecutive frames in order to boost accuracy

SKILLS

- **Programming Languages & Tools:** C/C++, Python, Linux, TensorFlow, Mitsuba Renderer