

JIAYI WU

jiayi-wu-leo.github.io | 5302 Davis Point Ln | Greenbelt, MD 20770 | (352)709-0593 | jiayiwu@umd.edu

EDUCATION

University of Maryland, College Park College Park, MD, US

Ph.D in Computer Science Aug. 2023- Present

- Advisor: Prof. [Yiannis Aloimonos](#)

University of Florida Gainesville, FL, US

M.S. (Thesis) in Electrical and Computer Engineering GPA:3.83/4.00 Aug. 2021- May. 2023

- Advisor: Prof. [Md Jahidul Islam](#)

Zhejiang Sci-Tech University (ZSTU) Hangzhou, China

B.E. in Mechatronic Engineering GPA: 86/100 Sept. 2017- Jun. 2021

- 2021 Outstanding Graduate, Zhejiang Sci-Tech University

PUBLICATIONS AND PATENTS

- [1] **Wu, Jiayi, Yu, Boxiao, Islam, Md Jahidul.** *3D Reconstruction of Underwater Scenes using Nonlinear Domain Projection. **Best Paper Award** at the IEEE Conference on Artificial Intelligence (IEEE CAI 2023)* [[IEEE Xplore](#)] [[Poster](#)] [[Video demo](#)]
- [2] **Yu, Boxiao, Wu, Jiayi, Islam, Md Jahidul.** *UDepth: Fast Monocular Depth Estimation for Visually-guided Underwater Robots. IEEE International Conference on Robotics and Automation (ICRA 2023)* [[IEEE Xplore](#)] [[Code](#)] [[pre-print](#)]
- [3] **Wu, Jiayi.** *Low-Cost Depth Estimation and 3D Reconstruction in Scattering Medium. **Master's Thesis.** 2023* [[UFDC](#)]
- [4] **A. K. Roberts, J. Wu, A. Monsivais-Huertero, J. Judge, R. C. Moore and K. Sarabandi,** *Microwave Backscatter Phenomenology of Corn Fields at L-Band Using a Full-Wave Electromagnetic Solver, in IEEE Transactions on Geoscience and Remote Sensing (IEEE TGRS)* [[IEEE Xplore](#)]
- [5] **A. Kaleo Roberts, Kamal Sarabandi, Jasmeet Judge, Alejandro Monsivais-Huertero, Jiayi Wu.** *Validation of a Full-wave Backscatter Model for Corn Fields using Measurements from a Ground-based Scatterometer, IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2023)*
- [6] **Wu, Jiayi.** *Unmanned automobile automatic charging system and charging docking method. A **National Invention Patent** has been granted.* [[CN113511087A](#)]
- [7] **Wu, Jiayi.** *Stilt type deformation wheel. A **Utility Model Patent** has been granted.* [[CN212400777U](#)]
- [8] **Wu, Jiayi, Islam, Md Jahidul.** *Toward Real-time 3D Reconstruction of Underwater Scenes using Nonlinear Attenuation Prior, In review at IEEE Transactions on artificial intelligence (IEEE TAI)*

EXPERIENCES

Underwater 3D Reconstruction and Depth Estimation

University of Florida, Gainesville, FL, US

Master's thesis

Jan. 2022- Jun. 2023

- Designed an underwater compatible SfM (Structure from motion) pipeline that enhances the robustness of terrestrial SfM to scattering medium environments. One paper won Best Paper Award at IEEE CAI 2023.
- Formulated an novel domain projection module (RMI input space) for rough depth prediction for low-power embedded devices. Its mathematical part is used as a domain projection loss in Udepth to enforce the pixel-wise underwater attenuation constraints in the holistic learning process.
- Formulated a robust and efficient end-to-end model named UDepth, for fast monocular depth estimation by incorporating underwater domain knowledge into its supervised learning pipeline. One paper has been accepted by ICRA 2023.

Digital Audio and Video Algorithm Engineer in Vobile

Vobile, Santa Clara, CA, US

R&D Summer Internship (supervised by Dr. Jian Zhao, CTO of Vobile, Inc.)

May. 2022- Aug. 2022

- Developed and implemented a learning-based video retrieval system based on global feature and local feature fusion. And also wrote the user manual and targeted model performance optimization guidelines document of the system.
- Conducted a number of qualitative phase-shift auditory tests and found a relationship between the phase-shift cases and the psychoacoustic model.
- Upgraded the audio fingerprint encoding algorithm based on the classic psychoacoustic model. The upgraded algorithm can encode not only the sound pressure level of the audio fingerprint but also the threshold of its phase shift. (Implemented in C and MATLAB)

Python Toolkit Development in Remote Sensing Lab

University of Florida, Gainesville, FL, US

Graduate Student Assistant

Jan. 2022- Jan. 2023

- Completed 3D model generation code packages for corn and soybean plants, the packages can load data from the database and automatically generate 3D models of plants in large batches.
- Toolkit updates and optimizations for speed and data irregularities.
- A paper titled " *Validation of a Full-wave Backscatter Model for Corn Fields using Measurements from a Ground-based Scatterometer* " has been accepted to IGARSS 2023.

Low-cost Driverless Car Automatic Charging Docking System

ZSTU, China

Independent inventor (Undergraduate Graduation Project)

Dec. 2020- Jun. 2021

- Completely self-designed set of low-cost automatic charging solutions for driverless cars.
- Independently designed a low-cost and expandable spatial location acquisition module, and applied it on the prototype.
- Completed the prototype independently, and fully realized the automatic docking and communication functions of the automatic charging pile and the car charging port.

- Graduation design work were invited to participate in the National Engineering Graduation Design Competition and won the first national individual award (only two people in the country won this award).
- For this system, a China National Invention Patent has been granted.

HONORS & AWARDS

SCHOLARSHIPS

UF Herbert Wertheim College of Engineering Engineering Achieve Awd	2022 2021
Zhejiang Government Scholarship	2020 2018
First Class School Financial Aid for Overseas Exchange Program	2019

COMPETITIONS

Individual first prize in the National University Graduate Design Competition (Only two people won this award nationwide)	06/2021
Provincial First Prize of National 3D Digital Innovative Design Competition	10/2019
Second Prize of National 3dds Competition Classic	09/2019
Third Prize of The 16 th Zhejiang Province Mechanical Design Competition for College Student	06/2019
Third Prize of The <i>Challenge Cup</i> Extracurricular Academic Works Competition	04/2019
Second Prize of <i>Internet</i> + School Competition	04/2019

PROFESSIONAL SKILLS

PROGRAMMING

- **Proficient:** C, Python (TensorFlow, PyTorch, OpenCV, Open3d, etc), MATLAB
- **Familiar:** C++

SOFTWARES

- **Proficient:** MATLAB, ROS, SolidWorks, Ansys, SpaceClaim (by code), Altium Designer
- **Familiar:** Verilog, Catia, Labview

ACADEMIC SERVICES

- Reviewer for ICRA 2023 | 2024.
- Reviewer for IROS 2023.
- Reviewer for IEEE JOE.