# William (Weiyu) CHEN

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## Research Interest

My research interests includes the implementation of **control theory**, **optimization theory**, **theoretical robotics**, **computer vision**, and **machine learning** to the field of **agriculture and aquaculture engineering**

## Education

**University of Maryland (UMD)** **College Park, MD, USA**
Ph.D. in Bioengineering Jan. 2024 - present
- Expected graduation: 2026
- Bioimaging and Machine Vision (BMV) Lab, Advisor: Dr. Yang Tao

**University of Maryland (UMD)** **College Park, MD, USA**
M.S. in Electrical and Computer Engineering Aug. 2021 - Dec. 2023
- Thesis: Multifunctional Path Planning Algorithm and Model for Optimal, Smart, Sustainable Oyster Harvesting
- Bioimaging and Machine Vision (BMV) Lab, Advisor: Dr. Yang Tao

**National Taiwan University (NTU)** **Taipei, Taiwan**
B.S. in Engineering Science and Ocean Engineering Sep. 2018 - Jun. 2021
- Graduated 1 year early
- Advance Fluid Power Control Lab (AFPCL), Advisor: Dr.-Ing. Mao-Hsiung Chiang

## Research Experience

**Graduate Research Assistant (GA II),** *Advisor: Dr. Yang Tao* Jun. 2022 - present
Bioimaging and Machine Vision Lab (BMV Lab), UMD UMD, USA
- Researching data-driven smart oyster farming.
- Research supported by USDA NIFA SAS grant: #20206801231805

**Graduate Researcher,** *Advisor: Dr. Yiannis Aloimonos* Dec. 2021 - May. 2022
Perception and Robotics Group (PRG), UMD UMD, USA
- Researched underwater image dehazing with GANs and underwater SLAM
- Implementation of DVL and Bluerov 2 hardware
- Research supported by USDA NIFA SAS grant: #20206801231805

**Undergraduate Researcher,** *Advisor: Dr. -Ing. Mao-Hsiung Chiang* Aug. 2020 - Jun. 2021
Advance Fluid Power Control Lab (AFPCL), NTU NTU, TW
- Researched Indoor SLAM algorithms and applications

**Selected Course Projects**

CMSC828L - Advance Topics in Deep Learning, *Lecturer: Dr. David Jacobs* UMD, USA
*Project title:* "Underwater SLAM"
- Derived equations for SLAM and compare performance of traditional extended Kalman filter (EKF) and particle filter to deep learning techniques

ESOE5117 - Capstone NTU, TW
*Project title:* "Self Driving Boat"
- Designed and 3D printed a boat along with circuit and sensor setup using STM32 microcontroller as well as writing simple control algorithms for navigation tasks

## Awards & Honors

**6th place, Virtual RobotX** May 2019 - Nov 2019

- Controlled a virtual robot based on prototype given by RobotX, competed with team Tang. Directed by Dr. Chi-Fang Chen
- Created a simple object detection algorithm from lidar point cloud on ROS Melodic before constructing the whole system with the entire team

## Teachings

**Teaching Assistant in ENEB408B** Jan. 2023 - May. 2023

*Department of Electrical and Computer Engineering* UMD

- Course name: **Capstone Design Lab**
- Taught lab sessions and assist the capstone project of 4th year undergraduate students
- Created teaching material for lab sessions and tutorials for DE1SoC, DE2SoC, DE10nano FPGA boards

**Teaching Assistant in ENEB455** Jan. 2023 - May. 2023

*Department of Electrical and Computer Engineering* UMD

- Course name: **Advanced FPGA System Design using Verilog for Embedded Systems**
- Taught lab sessions, hold office hours, grade assignments and exams for 4th year undergraduate students
- Created teaching material for lab sessions and tutorials for BASYS 3 FPGA board

**Teaching Assistant in ENEB344** Sep. 2022 – Dec 2022

*Department of Electrical and Computer Engineering* UMD

- Course name: **Digital Logic Design for Embedded Systems**
- Taught lab sessions, hold office hours, grade assignments and exams for 3rd year undergraduate students
- Created teaching material for lab sessions and tutorials for Digital Discovery and BASYS 3 FPGA board

**CodingBar Teaching Assistant and Lecturer** Opt. 2018 – June 2019

*AIRABBI Inc.* Taipei, Taiwan

- Taught students ranging from 5th grade to high school Python
- Drafted a course syllabus, wrote instructional plans, prepared lecture notes, and recorded full online lectures for BBC Microbit course

## Technical Skills

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| **Programming Languages** | MATLAB, C, Embedded C, C++, Java, SQL, Verilog, Python, LaTeX |
| **Engineering Tools** | AutoCAD, Solidworks, Rhino3D, Linux, ROS, Quartus, Vivado |
| **Languages** | Mandarin (native), English (Fluent) |

- IELTS academic: 7.5 (Reading: 8.5 | Listening: 8.5 | Speaking: 6.5 | Writing: 7)
- GRE: 324 (Verbal: 155 | Quantitative: 169 | AWA: 4.0)

## Talks, Workshops

**Talks**

- Multifunctional Path Planning Algorithm and Model for Optimal, Smart, Sustainable Oyster Harvesting, Apr. 2024. University of Maryland, Biomedical Engineering Society Mid-Atlantic Research Day, College Park, MD

## References

**Yang Tao**
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University of Maryland
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