Xiaomin Lin

Doctor of Philosophy,
Institute of Assured Autonomy(IAA),
Data Science and AI Institute(DSAI),
Energy Efficient High Performance Computing (EEHPC),
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Education

- **University of Maryland, College Park** — *Sept 2018 - Dec 2024*, College Park, MD
  Ph.D. in Electrical and Computer Engineering
  Dissertation: TOWARDS EFFICIENT OCEANIC ROBOT LEARNING WITH SIMULATION
  Advisor: Yiannis Aloimonos
  Sponsor: USDA NIFA Sustainable Agriculture System Program
- **University of Maryland, College Park** — *Sept 2015 - May 2018*, College Park, MD
  Master's of Science in Electrical and Computer Engineering
  Project: Unmanned Aircraft Systems (UAS) for Transporting Human Organs
  Advisor: Gilmer Blankenship
  Sponsor: Laboratory for Physical Sciences, University of Maryland
- **University of Dayton & NJUST** — *Sept 2011 - May 2015*, Dayton, OH & Nanjing, China
  Bachelor's of Science in Electrical Engineering (Dual Degree from both Universities)
  Magna cum Laude from University of Dayton
  Dean's list 2014, 2015
  Achievement: One of only two students selected from 600 in the engineering school for a dual-degree program

Honors and Awards

- **ISR Honors 2025 Graduate Achievements** — *May 2025*
  University of Maryland, College Park [🌐]
- **Postdoctoral Fellow** — *Jan, 2025 – Aug, 2025*
  Institute for Assured Autonomy, Whiting School of Engineering, Johns Hopkins University [🌐]
- **Best Paper Award** — *Oct, 2024*
  Autonomous Robotic Systems in Aquaculture Workshop, Abu Dhabi, IROS [🌐]
- **Best Poster Award** — *May, 2023*
  Maryland Robotics Center (MRC) Research Symposium [🌐]
- **Image Segmentation Challenge third place** — *Dec, 2020*
  Northrop Grumman

Grant

- **[G1] Air Force Research Lab (AFRL) Small Technology Transfer Research Program (STTR) Phase II: Mobile Software Tool for Counting Small Objects Using Computer Vision and Machine Learning (FA864920P1011)**
  Xiaochun Zhang, Yiannis Aloimonos ($500k, 09/2020–12/2021)
  Primary Contributor **(Xiaomin Lin)**: Proposed the original idea, led the preliminary project, authored the proposal, and delivered the final project presentation.

Press Coverage

- **ISR Honors 2025 Graduate Achievements, Institute for Systems Research News, 2025**
- **"OysterNet" + underwater robots will aid in accurate oyster count, MRC, Subsea Scholar Journals, Institute of System Research News, 2023**
- **Precision Aquaculture (Robotics), University of Maryland Extension**
- **UMD's SeaDroneSim can generate simulated images and videos to help UAV systems recognize 'objects of interest' in the water, Institute for System Research News, 2021**
- **IFIG framework helps robots follow instructions, Institute for System Research News, 2020**
- **S3AM (Smart Sustaining Shellfish Aquaculture Management), Newsletter Coverage, Summer 2024, Winter 2024, Fall 2023, Spring 2023**

Slightly longer story

My research lies at the intersection of robotics and perception, with a focus on enhancing autonomous underwater systems. I work within a perception lab to bring advanced perceptual capabilities to robots, enabling them to perform complex tasks in dynamic oceanic environments. I view robotics and perception as deeply interwoven: robots need to move to perceive their surroundings effectively, and active perception, in turn, aids them in executing tasks. Specifically, I develop frameworks for autonomous underwater vehicles (AUVs) to detect and map marine objects like oyster beds and coral reefs using both real and synthetic data. I leverage simulation-based techniques, data-driven decision-making, and multi-modal sensor integration to create robust systems that thrive in challenging conditions. My ultimate goal is to advance autonomous systems that support conservation, research, and sustainable marine ecosystem management.

Fully-Refereed Publications

C=Conference, S=In Submission, T=Thesis

[J.4] Feng, Y., Pallerla, C., Lin, X., Sohrabipour, P. Sr., Crandall, P., Shou, W., She, Y., & Wang, D. (2025). **Synthetic Data Augmentation for Enhanced Chicken Carcass Instance Segmentation**. *IEEE Transactions on AgriFood Electronics*. (In revision, recommendation for publication)

[J.3] Duporge, I., Lin, X., Palnitkar, A., Suresh, A., Isupova, O., Rubenstein, D., & Aloimonos, Y. (2025). **Automated Rhinoceros Detection in Satellite Imagery using Deep Learning**. *Scientific Reports*. (Accepted, in press).

[J.2] Chen, W., Wang, C.-Y., Joshi, K., Williams, A., Hevaganinge, A., Lin, X., Senthil Kumar, S. S., Pattillo, A., Yu, M., Chopra, N., Gray, M., & Tao, Y. (2025). A Kinodynamic Model for Dubins-Based Trajectory Planning in Precision Oyster Harvesting. *Sensors, 25*(15), 4650. MDPI. Published July 27, 2025.

[J.1] Campbell, B., Williams, A., Baxevani, K., Campbell, A., Dhoke, R., Hudock, R. E., Lin, X., Mange, V., Neuberger, B., Suresh, A., Vera, A., Trembanis, A., Tanner, H. G., & Hale, E. (2025). Is AI currently capable of identifying wild oysters? A comparison of human annotators against the AI model, ODYSSEE. *Frontiers in AI and Robotics, Autonomous Robotic Systems in Aquaculture: Research Challenges and Industry Needs*. Published May 6, 2025.

[C.10] Wu, Z., Modi, A., Mavrogiannis, A., Joshi, K., Chopra, N., Aloimonos, Y., Rekleitis, I., & Lin, X. (2025). DREAM: Domain-aware Reasoning for Efficient Autonomous Underwater Monitoring. Submitted to **ICRA**.

[C.9] Kapoor, K., Mackey, W., Aloimonos, Y., & Lin, X. (2025). HiCL: Hippocampal-Inspired Continual Learning. Submitted to **AAAI**.

[C.8] Kallakurik, U., Humes, E., Jonna, R., Lin, X., & Mohsenin, T. (2025). Enabling On-Device Medical AI Assistants via Input-Driven Saliency Adaptation. IEEE Biomedical Circuits and Systems Conference (BioCAS), 2025.

[C.7] Lin, X., Mange, V., Suresh, A., Neuberger, B., Palnitkar, A., Campbell, B., ... & Aloimonos, Y. (2025). **ODYSSEE: Oyster Detection Yielded by Sensor Systems on Edge Electronics.** In proceeding of *2025 IEEE International Conference on Robotics and Automation (ICRA)*.

[C.6] Wu, J., Lin, X., He, B., Fermuller, C., & Aloimonos, Y, et al. (2025). **ViewActive: Active viewpoint optimization from a single image.** In proceeding of *2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.

[C.5] Wu, J., Lin, X., Negahdaripour, S., Fermüller, C., & Aloimonos, Y. (2024, Oct).**MARVIS: Motion & Geometry Aware Real and Virtual Image Segmentation.** In proceeding of *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE. Abu Dhabi, UAE.

[C.4] Lin, X., Karapetyan, N., Joshi, K., Liu, T., Chopra, N., Yu, M., ... & Aloimonos, Y.(2023, Oct). **Uivnav: Underwater information-driven vision-based navigation via imitation learning.** In *2024 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5250-5256. IEEE. Yokohama, Japan. DOI:10.1109/ICRA57147.2024.10611203

[C.3] Karabatis, Y., Lin, X., Sanket, N. J., Lagoudakis, M. G., & Aloimonos, Y. (2023, Oct). **Detecting Olives with Synthetic or Real Data? Olive the Above.** In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 4242-4249. IEEE. Detroit, MI, USA. DOI:10.1109/IROS55552.2023.10341765

[C.2] Lin, X., Sanket, N. J., Karapetyan, N., & Aloimonos, Y. (2023, May). **Oysternet: Enhanced oyster detection using simulation.** In *2023 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5170-5176. IEEE. London, United Kingdom. DOI:10.1109/ICRA48891.2023.10160830

[C.1] Lin, X., Liu, C., Pattillo, A., Yu, M., & Aloimonous, Y. (2023). **Seadronesim: Simulation of aerial images for detection of objects above water.** In *IEEE/CVF Winter Conference on Applications of Computer Vision*, pp. 216-223. IEEE. 2023, Waikoloa, HI, USA. DOI:10.1109/WACVW58289.2023.00027

[T.1] Xiaomin Lin. (2024). **TOWARDS EFFICIENT OCEANIC ROBOT LEARNING WITH SIMULATION**. Manuscript submitted for publication in *University of Maryland, 2024*.

[**S.4**] Kapoor, K., Mackey, W., Aloimonos, Y., & Lin, X. (2025). **HiCL: Hippocampal-Inspired Continual Learning**. Submitted to *AAAI Conference on Artificial Intelligence (AAAI)*, 2025.

[**S.3**] Wu, Z.*, Modi, A.*, Mavrogiannis, A., Joshi, K., Chopra, N., Rekleitis, I., & Lin, X. (2025). **DEEP-VLM: Dynamic Exploration and Efficient Policy with Vision-Language Model**. Manuscript submitted for publication in *ICRA*.

[**S.2**] Feng, Y., Pallerla, C., Lin, X., Sohrabipour Sr, P., Crandall, P., Shou, W., She, Y., & Wang, D. (2025). Synthetic Data Augmentation for Enhanced Chicken Carcass Instance Segmentation. Submitted to *IEEE Transactions on AgriFood Electronics*.

[**S.1**] Atzili, T., Bhamidipati, A., Jain, Y., Yang, W. W., Kommaraju, S. K., Kona, K., Lin, X., & Zha, Y. (2024). **AAM-SEALS: Developing Aerial-Aquatic Manipulators in SEa, Air, and Land Simulator**. Manuscript submitted for publication in *ICRA*.

Lightly-Refereed Publications

O=Conference, A=Abstract

[**O.8**] Walczak, M., Kallakuri, U., Humes, E., Lin, X., & Mohsenin, T. (2025). **BitMedViT: Ternary-Quantized Vision Transformer for Medical AI Assistants on the Edge**. Invited paper at *IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2025.

[**O.7**] Karapetyan, N., Xu, M., Zhang, Y., Joshi, K., Anil, N., Mayenkar, S., Lin, X., Aloimonos, Y., Chopra, N., Malone, P., & Yu, M. (2025, September–October). **OysterBot: Autonomous Surface Vehicle Based System for Aquaculture Monitoring Operations**. In *OCEANS 2025 – Great Lakes (MTS/IEEE)*, IEEE. Chicago, IL, USA.

[**O.6**] Negahdaripour, S., Kyatham, H., Xu, M., Lin, X., Aloimonos, Y., & Yu, M.(2024, September).**GoPro Modeling and Application in Opti-Acoustic Stereo Imaging.** In *OCEANS 2024-MTS/IEEE Halifax*, IEEE. Halifax, NS, Canada.

[**O.5**] Kyatham, H., Negahdaripour, S., Xu, M., Lin, X., Yu, M., & Aloimonos, Y(2024, September).**Performance Assessment of Feature Detection Methods for 2-D FS Sonar Imagery.** In *OCEANS 2024-MTS/IEEE Halifax*, IEEE. Halifax, NS, Canada.

[**O.4**] Gaur, A., Liu, C., Lin, X., Karapetyan, N., & Aloimonos, Y.(2023, September). **Whale detection enhancement through synthetic satellite images.** In *OCEANS 2023-MTS/IEEE US Gulf Coast*, pp. 1-7. IEEE. Biloxi, MS, DOI:10.23919/OCEANS52994.2023.10337400

[**O.3**] Palnitkar, A., Kapu, R., Lin, X., Liu, C., Karapetyan, N., & Aloimonos, Y..(2023, September). **Chatsim: Underwater simulation with natural language prompting.** In *OCEANS 2023-MTS/IEEE US Gulf Coast*, pp. 1-7. IEEE. Biloxi, MS, DOI:10.23919/OCEANS52994.2023.10337406

[**O.2**] Lin, X., Jha, N., Joshi, M., Karapetyan, N., Aloimonos, Y.,& Yu, M. (2022, October). **Oystersim: Underwater simulation for enhancing oyster reef monitoring**. In *OCEANS 2022, Hampton Roads*, pp. 1-6. IEEE. 2022, Hampton Roads. DOI:10.1109/OCEANS47191.2022.9977233

[**O.1**] Kanu, J., Dessalene, E., Lin, X., Fermuller, C., & Aloimonos, Y. (2020). **Following instructions by imagining and reaching visual goals.** arXiv preprint arXiv:2001.09373. *Arxiv, 2020.*

[**A.1**] Lin, X., Pattillo, A., & Aloimonos, Y.(2022, Feburay). **Simulation Based Oyster Detection**. In *Aquaculture America 2023 Conference and Exposition*, New Orleans, Louisiana USA

Workshops

[**W.6**] ***Highlights workshop papers.*** [🌐]

Kyatham, H., Suresh, A., Palnitkar, A., Aloimonos, Y., & Lin, X. (2025). EREBUS: End-to-End Robust Event-Based Underwater Simulation. In 2025 IEEE International Conference on Robotics and Automatio Workshop of AQ²UASIM: Advancing Quantitative and QUAlitative SIMulators for Marine Applications.

[**W.5**] Herrin, E. B., Zhang, Z., Sarma, P., Lin, X., & Shin, J. (2025). An Underwater Action Dataset for Scuba Gesture Recognition in Human-Machine Teaming. In 2025 IEEE International Conference on Robotics and Automatio Workshop of AQ²UASIM: Advancing Quantitative and QUAlitative SIMulators for Marine Applications.

[**W.4**] Sarma, P., Palnitkar, A., Suresh, A., Herrin, E. B., Shin, J., Aloimonos, Y., & Lin, X. (2025). DeepSonar: AI-Assisted Synthetic Sonar Data Generation. In 2025 IEEE International Conference on Robotics and Automatio Workshop of AQ²UASIM: Advancing Quantitative and QUAlitative SIMulators for Marine Applications.

[**W.3**] ***Best paper award: Best control framework for autonomous navigation and control.***

Joshi, K., Liu, T., Williams, A., Gray, M., Lin, X., & Chopra, N. (2024, Oct).**3D Water Quality Mapping using Invariant Extended Kalman Filtering for Underwater Robot Localization**. In *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), workshop of "Autonomous Robotic Systems in Aquaculture: Research Challenges and Industry Needs"*. IEEE. Abu Dhabi, UAE.

[**W.2**] Mao, M., Perez-Cabarcas, M. M., Kallakuri, U., Waytowich, N. R., Lin, X., & Mohsenin, T. (2025). Multi-RAG: A Multimodal Retrieval-Augmented Generation System for Adaptive Video Understanding. Workshop on Continual Robot Learning from Humans (RSS workshop), held as part of Robotics: Science and Systems.

[**W.1**] Humes, E., Lin, X., Kallakuri, U., & Mohsenin, T. (2025). RAFT: Robust Augmentation of FeaTures for Image Segmentation. CVPR Workshop on Synthetic Data for Computer Vision (part of IEEE CVPR).

Professional Experience

- **University of South Florida, Department of Electrical Engineering** *Aug 2025 – Present*
  Assistant Professor Tampa, Florida
  - Establishing and directing the **ERA Lab (Embodied Robotics & Autonomy Lab)**, advancing research in underwater, medical, and agricultural robotics.
  - Leading a multidisciplinary team of graduate and undergraduate researchers, fostering an inclusive and collaborative environment to advance autonomy and edge-AI systems.
  - Designing and teaching undergraduate and graduate courses in robotics, computer vision, and machine learning, integrating cutting-edge research insights into the classroom.
  - Driving federally funded research initiatives, securing external grants, and building collaborations with industry and government laboratories (e.g., ARL, ONR, USDA).
  - Publishing in top-tier venues (ICRA, CVPR, IROS, BioCAS, Scientific Report) and serving the community through editorial roles, program committees, and workshop organization.
  - Mentoring students towards competitive fellowships, research awards, and successful placements in academia, industry, and government labs.
  - Advancing departmental and university service through committee contributions, cross-disciplinary initiatives, and outreach in STEM education.
- **Johns Hopkins University, EEHPC Lab [🌐]** *Jan 2025 – Aug 2025*
  Postdoctoral Researcher, Advisor: Tinoosh Mohsenin Baltimore, Maryland
  - Advanced edge-AI research for medical imaging and robotics, focusing on efficient model design, continual learning, and multimodal reasoning.
  - Developed robotic platforms and algorithms, including deployment on the Unitree Go2 quadruped, Unitree humanoid prototypes, and collaborative systems for adaptive autonomy.
  - Co-authored and secured a winning proposal with Dr. Mohsenin funded by the U.S. Army Research Laboratory (ARL).
  - Mentored more than six graduate and undergraduate students in medical AI, embedded systems, and robotics, resulting in multiple co-authored publications.
  - Contributed to academic community building as co-organizer of the *AAAI GenAI@EDGE* workshop.
- **University of Maryland, Perception and Robotic Group[🌐]** *Sept 2018 - Dec 2024*
  Graduate Research Assistant, Advisor: Yiannis Aloimonos College Park, Maryland
  - Designed, developed, and implemented perception-driven algorithms and lightweight networks for autonomous systems, enabling edge computing, optimal decision-making, and adaptive navigation in complex environments.
  - Generated synthetic datasets to simulate challenging real-world conditions, significantly reducing the cost and time for data collection. Conducted advanced data analysis to validate and enhance system performance.
  - Coordinated interdisciplinary projects with collaborators across academia, government agencies, and industry. Took the initiative to lead teams, including organizing and contributing to joint publications such as Odyssee.
  - Applied research to diverse domains such as oyster stock assessment, olive yield estimation, and marine robotics. Successfully deployed systems in field settings, ensuring real-time functionality and scalability.
  - Contributed to funding proposals and public presentations, promoting research impact and fostering collaboration within and beyond my institution.
- **University of Maryland, Autonomous System Lab** *Sept 2016 - August 2018*
  Graduate Research Assistant, Advisor: Gilmer Blankenship College Park, Maryland
  - Built a fully functional drone and an autonomous all-terrain vehicle (ATV), incorporating hardware integration and software development for navigation and control.
  - Designed and assembled mechanical components, integrated sensors, and actuators, and ensured system functionality in real-world conditions.
- **Budy.bot [🌐], led by CEO Samay Kohil, founder of GreyOrange** *May 2024 – July 2024*
  Machine Learning Engineer (One of four team members in a $4.2M seed-funded startup) Palo Alto, CA
  - Led the design and implementation of enterprise-specific LLMs for Budy.bot, optimizing SaaS tasks through Retrieval-Augmented Generation (RAG) and fine-tuning LLama3. These efforts significantly improved the relevance and efficiency of the system, enhancing customer satisfaction and enabling faster, more accurate responses to user queries. As a result, Budy.bot gained a competitive edge in delivering personalized, context-aware solutions, leading to higher adoption rates among enterprise clients.

- Directed the technical hiring process, collaborating with human resources to design and conduct rigorous coding and behavioral interviews. Successfully resulted in hiring two more members to the team of four. This strategic expansion enabled Budy.bot to scale its operations and accelerate product development, directly contributing to the successful rollout of key features.
- Provided comprehensive mentorship to junior engineers, focusing on machine learning best practices, model fine-tuning techniques, and streamlined software engineering workflows. Conducted internal classes and practical lessons on fine-tuning methodologies for Large Language Models (LLMs), demonstrating how to apply techniques such as Retrieval-Augmented Generation (RAG) for contextual enhancements, Low-Rank Adaptation (LoRA) for efficient parameter updates, and traditional fine-tuning for domain-specific tasks. As a result, team members significantly improved their technical capabilities, with one engineer excelling in seamlessly integrating front-end and back-end systems, thereby enhancing the team's overall productivity and cohesion. This contributed directly to the timely delivery of high-quality updates and features for Budy.bot.

- **Distat Co. Ltd [🌐]** *May 2021 - Aug 2021*
  Computer Vision Engineer(Lead Engineer for this project [G1]) Kennett Square, PA
  - Defined and led the AFRL STTR project to develop accurate industrial component counting algorithms, achieving 97% counting accuracy using synthetic datasets for over 50 different industrial parts and AWS-based implementation. Took the project from initial concept to completion, including defining the problem, conducting a pre-proposal demonstration, writing the proposal, and executing all project phases.
  - Led and managed a team of four, developed and delivered a functional application that enables efficient and reliable component counting for Air Force warehouses. The app integrates seamlessly into warehouse operations, enhancing accuracy and reducing manual labor. The project culminated in a successful presentation to AFRL stakeholders, showcasing its potential for large-scale deployment and demonstrating the effectiveness of our solution.

- **Bosch Automotive Products Co. Ltd [🌐]** *June 2016 - Aug 2016*
  Robot System Developer Intern Suzhou, China
  - Designed and showcased an advanced industrial robotic system integrating Fanuc (APAS) robots with a Manufacturing Execution System (MES) at Bosch's internal conference during the 2018 World Manufacturing Conference, attended by over 1,000 participants. The system demonstrated seamless automation for manufacturing processes, highlighting capabilities such as real-time data integration, optimized task allocation, and enhanced production efficiency. The demo received highly positive feedback from participants, with many praising its innovative approach to improving manufacturing workflows. This successful showcase reinforced Bosch's commitment to Industry 4.0 technologies and their potential to transform manufacturing practices.

Teaching Experience

- **CMSC 426: Computer Vision (Fall 2020)** *professor: Yiannis Aloimonos[🌐]*
  Teaching Assistant. Topics: Image Processing, Feature Detection, Object Recognition
- **ENEE350: Computer Organization (Spring 2021, 2020, 2019)** *professor: Yavuz Oruc*
  Teaching Assistant. Topics: Microprocessors, Assembly Language, Computer Architecture
- **ENEE303(H): Analog and Digital Electronics (Fall 2019)** *Senior lecture: Danilo Romero*
  Teaching Assistant. Topics: Transistors, Amplifiers, Digital Logic Design
- **ENEE408I: Capstone Design Project(Fall 2018, 2019)** *professor: Gilmer Blankenship*
  Teaching Assistant. Topics: Robotics, Autonomous Systems, Multi-agent Control
- **ENEE380: Electromagnetic Theory (Fall 2018)** *professor:Dagenais Mario*
  Teaching Assistant. Topics: Maxwell's Equations, Wave Propagation, Electromagnetic Fields

Talks and presentations

- **"DNALaCT: Ultralong Genomic Seequence Modeling with Test-Time Training."** *Sept 21nd, 2025*
  Talk at Rutgers University–New Brunswick [🌐]
  - AI for Health workshop

- **"Seeing Beneath the Surface: Vision-Enabled Robots for Long-term Ocean Monitoring."** *May 5nd, 2025*
  University of Central Florida, Department of Electrical Engineering and Computer Science [🌐]
  - Job talk for Tenure-track Professor for AI initiative.

- **"AI-Driven Perception for Long-Term Ocean Monitoring"** *May 5nd, 2025*
  University of South Florida, Department of Electrical Engineering and Computer Science [🌐]
  - Job talk for Tenure-track Professor for AI initiative.

- **"AI-Driven Perception for Long-Term Ocean Monitoring"** *Apr 2nd, 2025*
  AI for Engineering and Scientific Discoveries [🌐]
  - AAAI Spring Symposium 2025

- **"Seeing Beneath the Surface"** *Feb 27th, 2025*
  University of South Florida, Department of Electrical Engineering Semianr
  - Job talk for Tenure-track Professor.

- **"Seeing Beneath the Surface"** *Feb 24th, 2025*
  Virginia Tech, Aerospace and Ocean Engineering Semianr [🌐]

◦ Job talk for Assistant Professor - AI/ML for Aerospace and Ocean Perception

- **"Seeing Beneath the Surface"** *Feb 21th, 2025*
  Catholic University of America, EECS Seminar [🌐]
  ◦ Delivered an in-person talk hosted by Prof Hieu Bui and Chair Nader M Namazi, attended by a diverse audience of 20 participants, including faculties and students.
- **"Vision-Enabled Robots for Long-term Ocean Monitoring"** *Feb 21th, 2025*
  Univeristy of Maryland Baltimore County, UMBC Center for Artificial Intellige Seminar [🌐]
  ◦ Delivered an in-person talk hosted by Prof. Tejas Gokhale, attended by a diverse audience of 50 participants, including faculties and students.
- **"Where is my Oyster?"** *November 16th, 2022*
  Smart Sustainable Shellfish Aquaculture Management" (S3AM) program webinar [🌐]
  ◦ Delivered a webinar hosted by Allen Pattillo, attended by a diverse audience of 30 participants, including industry professionals(Pacific Seafood Inc.), ecologists, aquaculture robotics experts, and computer vision researchers. The presentation highlighted advancements in sustainable shellfish management through robotics and AI, fostering interdisciplinary discussions and potential collaborations.
- **"Enhanced Oyster Detection Using Simulation"** *May 25th - 2023*
  Maryland Robotics Center
  ◦ The symposium brought together researchers, faculty, students, and industry professionals from the Maryland Robotics Center and related fields. The presentation, focused on simulation-based oyster detection for ecological monitoring, received positive feedback for its innovation and interdisciplinary approach, earning the ***Best Poster Award.***

Mentoring/Advising

Students Mentored

- **Mingyang Mao** *2024-current*
  Currently Graudate Student at the Johns Hopkins University
- **Edward Humes** *2024-current*
  Currently Ph.D. Student at Johns Hopkins University
- **Michael Xu**, **[O.5]**, **[O.6]** *2022-current*
  Currently Ph.D. Student at the University of Maryland
- **Hitesh Kyatham**, **[O.5]**, **[O.6]** *2023-current*
  Currently Graudate Student at the University of Maryland
- **Arjun Suresh**, **[S.2]**, **[P.1]** *2022-current*
  Currently Undergraduate Student at the University of Maryland
- **Akshaj Gaur**, **[O.4]**, **[P.3]** *2021-2024*
  Currently graduate Student at the University of Maryland
- **Cheng Liu**, **[C.1]**, **[O.4]** *2022-2024*
  Currently Ph.D. Student at George Washington University
- **Vivek Mange**,**[S.2]** *2024-current*
  Currently Graduate Student at the University of Delaware
- **Abhinav Modi**, **[P.5]** *2024-current*
  Currently Senior Computer Vision Engineer at Rivian
- **Yianni Karabatis**, **[C.3]** *2022-2024*
  Currently Ph.D. Student at the University of Maryland
- **Yihong Feng**, **[P.6]** *2024-current*
  Currently Graduate Student at University of Arkansas
- **Yashveer Jain**, **[S.3]** *2023-2024*
  Currently Graduate Student at the University of Maryland
- **Adonai Vera** , **[S.2]** *2023-2024*
  Currently Graduate Student at the University of Cincinnati
- **Abhinav Bhamidipati**, **[S.3]** *2023-2024*
  Currently Robotics Software Intern at Inception Robotics
- **Rashmi Kapu**, **[O.3]** *2023*
  Currently Master's Student at the University of Maryland
- **Mayank Joshi**, **[O.2]** *2021-2022*
  Currently Software Engineer at Caterpillar Inc.
- **Nitesh Jha**, **[O.2]** *2021-2022*
  Currently Systems Engineer at Qualcomm Inc.
- **Krithika Govindaraj**, **Unblock: Interactive Perception for Decluttering**, **master thesis** *2019-2021*
  Currently Computer Vision Software Engineer at Niantic Inc.
- **Taru Rustagi**, **[G.1]** *2020-2021*
  Currently MS in CMU
- **Hridoy Rozario**, **[G.1]** *2020-2021*

Community Engagements

Volunteering Service

- **AI4ALL, University of Maryland summer camp**, Instructor — *Summer, 2019*
- **Robotics Workshop for Zimbabwe High Schoolers at Maryland**, Instructor — *August 1st, 2023*
- **Inception Robotics**, Mentor — *2023 - Present*
- **Maryland Robotics Center, University of Maryland**, Student Ambassador — *2021 - Present*
- **Maryland Day, University of Maryland**, Volunteer — *2017-2024*
- **Senior Capstone Project, University of Maryland Eastern Shore**, Mentor/Sponsor — *Spring, 2022*
- **Summer Undergraduate Research Program (SURP), Salisbury University**, Mentor — *Summer, 2022*
- **Robotics @ Maryland (club of 100+ members)**, Mentor — *2021 - Present*
- **Mechanical Engineering Capstone Class**, Mentor/Sponsor, University of Maryland — *2023 - Present*
- **Maryland Department of Natural Resources**, Collaborator on Oyster Yield Estimation — *2024*
- **NOAA Cooperative Oxford Laboratory**, Collaborator on Oyster Yield Estimation — *2024*

Outreach Activities

- **Tour for President Pines**, IDEA Factory at Maryland — *September 6th, 2023*
- **International SeaPerch Challenge (RoboNation)**, Neutral Buoyancy Research Facility — *May 13th, 2023*
- **RoboNation Open House**, Robotics Automation Lab, IDEA Factory — *May 13th, 2023*
- **Tour for Clark Foundation**, Robotics Automation Lab, IDEA Factory — *April 25th, 2023*
- **Tour for Congressman Glenn Ivey**, Robotics Automation Lab, IDEA Factory — *July 24th, 2023*
- **Smart Sustainable Aquaculture Management (S3AM) Summit**, Maryland — *Summer, 2022, 2023, 2024*
- **Tours for Governor Moore's Cabinet**, University of Maryland, IDEA Factory — *September 6th, 2024*
- **Korea-U.S. Joint Coordination Panel for Aquaculture Cooperation Tour**, Maryland — *June 27th, 2024*
- **D.C. Science Writers Association Tour of the School of Engineering**, UMD — *November, 2024*
- **Tour for Clearview Regional High School FTC Teams led by coach Kyle Gray**, UMD — *November, 2024*

Academic Service

- **Associate Editor 2026 IEEE International Conference on Robotics & Automation** — *2025-current*
- **Program Committee AAAI 2025 Spring Symposium Series** — *2025*
- **Reviewer of Robotics automation- Letter** — *2022 - 2025*
- **Reviewer of IEEE International Conference on Robotics and Automation** — *2022 - 2024*
- **Reviewer of IEEE/RSJ International Conference on Intelligent Robots and Systems** — *2022 - 2024*
- **Organizer for PRG Seminar for robotics and computer vision** — *2022 - current*
- **Associate Coordinator for MRC Seminar,** Ioannis Reckletis, Katherina Skinner, Jane Shine — *2020 - current*
- **ECE TA Training and Development (TATD) Fellow, University of Maryland,** — *2020 - 2021*
- **Computer Vision and Language Reading Group, University of Maryland,** Founder, — *2018 - 2019*

Professional Memberships

- **IEEE, member** — *Octorbor, 2022 - Present*
- **Marine Technology Society** — *Octorbor,2024 - Present*
- **Society for Marine Mammalogy** — *Nov,2024 - Present*

Software Skills

- **Programming & Development:** Python, C++, JavaScript (React.js), SQL, Docker, Kubernetes, Git, AWS (including SageMaker), and FastAPI
- **Data Science & AI/ML:** PyTorch, TensorFlow, Scikit-learn, Keras, Large Language Models (LLMs), Computer Vision, Robotics, Autonomous Navigation, and Statistical Tools (Pandas, Matlab, PySpark)
- **Tools & Platforms:** Apache Kafka, AWS, Ubuntu, Raspbian, Windows, Blender, Unity, SQL Databases, and Cloud & DevOps (Docker, Kubernetes)

Robots worked with

- **Ground Vehicle**
  - Custom-modified Autonomous Terrain Vehicle
  - Custom-built Autonomous Ground Vehicle
  - Turtlebot
  - DJI Robomaster
- **Aerial Vehicle**
  - Custom-built Autonomous Aerial Vehicle
  - Custom-built Autonomous Drone Capable of Landing on Water.
  - Cross-Domain Drone
- **Underwater Vehicle**
  - 4-H underwater robot
  - BlueROV2 Heavy Configuration.
  - Aqua Robot
- **Water Surface Vehicle**
  - Terpbot (Custom-built Autonomous Surface Vehicle)
- **Humanoid**
  - Nao robot
- **Manipulators**
  - Baxter
  - Sawyer
  - UR10
  - UR5

References

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