Aiwei Ivy Zhang

603-277-8586 | Email | Website | Linkedin | Google Scholar

Education

Dartmouth College Hanover, NH

Bachelor of Arts, Major in Computer Science (Cumulative GPA: 3.86/4.0) *June 2025*

- Graduate-level courses: Multi-modal Gen-AI, Deep Learning, Video Understanding, Computer Vision, Robotics
- Minor in Environmental Studies

St. Paul's Co-educational College Hong Kong SAR

International Baccalaureate Diploma Programme (IBDP), secondary school education *June 2021*

- 2021 IBDP Exam-Track 44/45 (Top 1.9% worldwide), SAT 1530 (Verbal 730, Mathematics 800)

In Submission / In Review

F. Y. Ruan*, **A. Zhang***, J. Y. Oh, S. Jin, N. C. Jacobson. *AI Foundation Models for Wearable Movement Data in Mental Health Research.* (* equal contribution) Submitted to top-tier journal.
Available on arXiv: at https://doi.org/10.48550/arXiv.2411.15240.

M. Jeong*, A. Chadda*, Z. Ren, L. Zhao, H. Liu, **A. Zhang**, Y. Jiang, S. Achong, S. Lensgraf, M. Roznere, and A. Quattrini Li. *SeePerSea: Multi-modal Perception Dataset of In-water Objects for Autonomous Surface Vehicles.* (* equal contribution) Submitted to IEEE Transaction on Field Robotics.

Publications

M. Jeong*, A. Chadda*, Z. Ren, L. Zhao, H. Liu, M. Roznere, **A. Zhang**, Y. Jiang, S. Achong, S. Lensgraf, and A. Quattrini Li. *Multi-modal Perception Dataset of In-water Objects for Autonomous Surface Vehicles.* Workshop on Field Robotics at 2024 IEEE International Conference on Robotics and Automation (ICRA). [Best Paper Award Nominee] (* equal contribution)

Ongoing Work

A. Zhang, N. C. Jacobson. *Generative AI Meets Time-Series: Native Multimodal Integration for Behavioral Understanding.* Honors Senior Thesis Track for the Computer Science major.

Research Experience

AI & Mental Health (AIM HIGH) Laboratory at Dartmouth April 2024 – Present

Advised by Prof. Nicholas Jacobson & in joint collaboration with Prof. SouYoung Jin *Hanover, NH*

- Developed the first pretrained and fully attention-based model, Pretrained Actigraphy Transformer (PAT), designed specifically to handle actigraphy, consistently outperforming baseline and most commonly used models
- Conducted ablation studies and comprehensive experiments to find the best model configurations, including optimal masking ratio, effects of smoothing the input data, etc.
- Sourced and pre-processed NHANES actigraphy datasets for over 29,000 participants, aligning wearable sensor data with health-related outcomes (Benzodiazepine use, SSRI use, depression, sleep disorders and sleep abnormalities)
- Implemented CNN and LSTM-based RNN baseline models to assess predictive performance on various tasks
- Advise and collaborate with multiple graduate students on adapting PAT and other deep learning models for predicting health and medical research projects, such as depression variability, PTSD and anxiety tracking

Dartmouth Reality and Robotics Lab January 2023 – Present

Advised by Prof. Alberto Quattrini-Li *Hanover, NH*

- Annotated a large set of NuScene images, ensuring high accuracy for applying state-of-the-art benchmarks for image and point cloud detection and segmentation for ICRA workshop paper and *SeePerSea* submission
- Managed dataset preparation and benchmarking for a publicly accessible multi-modal dataset
- Tracked and plotted real-time navigation trajectories for precise mapping using web-based application
- Owning creation of visual odometry model that estimates movement of StoneClaw Autonomous Underwater Vehicle, for transporting blocks to build small scale structures in marine ecosystems

Industry Experience

Boston Consulting Group May 2022 – August 2022
Assistant Consultant Intern *Hong Kong*

- Turbocharged internal BCG Gamma (now BCG X) data analysis efficiency by over 100% using Python and SQL
- Designed AI-powered outreach strategies for $700m telecom in order to improve subscriber retention levels
- Created ESG retrofit solutions and financial plans to help $160m bank minimize mortgage-related emissions
- Built knowledge document on infrastructure software cloud computing and Asia's telecom landscape for client use

Honors, Awards & Research Grants

Dean's Honor List	2021-2022, 2023-2024
Citation for Academic Excellence in Multi-Modalities Generative AI (Graduate-level)	2024
Citation for Academic Excellence in Deep Learning (Graduate-level)	2024
Dartmouth Undergraduate Advising & Research Summer Research Grant – $6,200	2024
Dartmouth Neukom Institute for Computational Science scholarship – $1,200	2024
James O. Freedman Presidential Scholarship (for research amongst top-performing sophomores) – $2,400	2024
Citation for Academic Excellence in Topics in Video Understanding (Graduate-level)	2024
2x URAD Scholar (for promising research amongst sophomores and juniors) – $2,400	2023
Citation for Academic Excellence in Principles of Robot Design and Programming (Graduate-level)	2023
Citation for Academic Excellence in Problem Solving via Object-Oriented Programming	2022
Dartmouth Class of 2025 Emerging Leader (1/54 students for leadership and service out of 1528 student body)	2022

Teaching

Teaching Assistant: Computer Vision (Graduate-level) (30+ Students)	2025 Winter
Teaching Assistant: Foundations of Applied Computer Science (70+ Students)	2023 Fall
Teaching Assistant: Algorithms (30+ Students)	2023 Spring
Teaching Assistant: Problem Solving via Object Oriented Programming (80+ Students)	2022 Fall, 2023 Winter
Group Tutor: Introduction to Statistical Methods (15+ Students)	2022 Winter, 2022 Spring

Community Engagement

Dartmouth Student Robotics Team - Member on the Competitive Team
Dartmouth Alumni Ambassador - Undergraduate Admissions Interviewer
Dartmouth Agape Christian Fellowship
Dartmouth Kappa Delta Sorority
Dartmouth Women in Business - Former Public Relations Chair and Executive Member

Languages

English (Native), Mandarin (Native), Cantonese (Full Professional Proficiency)

References

Nicholas C. Jacobson, PhD
Associate Professor in Biomedical Data Science, Psychiatry, and Computer Science at Dartmouth College,
Email: nicholas.c.jacobson@dartmouth.edu

SouYoung Jin, PhD
Assistant Professor of Computer Science at Dartmouth College,
Email: souyoung.jin@dartmouth.edu

Alberto Quattrini-Li, PhD
Associate Professor of Computer Science at Dartmouth College,
Email: alberto.quattrini.li@dartmouth.edu