

# Dan Zimmerman

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## Research Interests

Ethical AI, machine learning, deep learning, real-time computer vision, autonomous systems, edge AI, underwater perception, physics-informed neural networks, transformers.

## Education

**Florida Atlantic University** – Boca Raton, FL

*MS in Artificial Intelligence* (GPA: 3.79/4.0) – Dec 2025 (expected)

**Relevant Coursework:** Artificial Intelligence, Deep Learning, Data Mining and Machine Learning, Digital Image Processing, Robotics Applications, Software Engineering, Cloud Computing, AI in Healthcare

**Florida Atlantic University** – Boca Raton, FL

*BS in Computer Science* (GPA: 3.68/4.0) – Cum Laude – May 2023

**Relevant Coursework:** Full-stack Web Development, Engineering Design, Mobile Applications, Cryptocurrency & Blockchain Technology, Data Structures, Stochastic Models, Logic Design, Embedded Systems Design

## Skills & Certifications

**Programming Languages:** Python, MATLAB, SQL, JavaScript, HTML, CSS, Swift

**Technologies:** TensorFlow, PyTorch, Keras, Jupyter Notebooks, CI/CD, Docker, Kubernetes, AWS, GCP, Rancher, ReactJS, NodeJS, ExpressJS, API Development, Git

**Certifications:** NASA Proposal Writing and Evaluation Experience Academy Participant, AWS Cloud Quest: Cloud Practitioner, CodePath iOS Developer

## Professional Experience

**FloodSense** – *Co-Founder* | Boca Raton, FL

Mar 2023 – Present

- Co-founded a startup focused on AI-driven flood prediction and monitoring systems using low-cost, off-the-shelf sensors (e.g., ultrasonic sensors, LoRaWAN protocol).
- Awarded Columbia University's inaugural Engineering Research Center VALIDATE Incubator's Ignite Prize for groundbreaking innovation in smart streetscape technology, recognizing excellence in urban infrastructure design, environmental sensing, and scalable civic technology solutions.
- Secured \$10,000 NSF seed grant for the project, allowing further research in predictive analytics and data-driven flood mitigation strategies..

**Wahoo Bay** – *Tech Lead and AI Researcher* | Pompano Beach, FL

Oct 2022 – Present

- Led a team developing an AI-powered ecological monitoring system, enhancing real-time research data collection and public engagement in marine conservation.
- Integrated machine learning algorithms to improve data accuracy for species identification, directly supporting ecological initiatives and educational outreach efforts.

**FAU** – *Graduate Teaching Assistant* | Boca Raton, FL

Aug 2023 – Dec 2023

- Supported professor and 140 students for hybrid in-person/remote class on intermediate iOS development
- Taught key concepts, answered questions, graded assignments, led discussions, held office hours, and moderated Discord discussion board

- CodePath.org – Tech Fellow** | San Francisco, CA (Remote) Aug 2023 – Dec 2023
- Led instructional sessions and provided mentorship in iOS development, enhancing student understanding and application of technical concepts through workshops, one-on-one sessions, and study groups.
  - Helped to cultivate a vibrant community among CodePath participants by organizing events and facilitating discussions while advocating for diversity in tech and representing the organization's mission to widen access to tech education.

- VA Medical Center – Chief of Respiratory Care** | Riviera Beach, FL Aug 2018 – Aug 2020
- Led and managed a team of 25 respiratory therapists, driving clinical excellence, fostering a culture of collaboration and accountability, and improving interdepartmental coordination to enhance patient care
  - Developed evidence-based protocols, improving treatment outcomes and reducing readmissions by 23%
  - Chaired and participated in various hospital committees, providing expertise on respiratory care policies, procedures, and regulatory compliance, resulting in zero deficiencies during Joint Commission accreditation survey.

- US Army – Soldier, Leader** | Alaska, Iraq, Texas, Jul 2006 – Oct 2018
- Led a team of 22 military and civilian respiratory therapists as Chief of Respiratory Care at the Army Burn Center
  - Served as Manager and Lead Respiratory Therapist for the Burn Flight Team; safely executed 20,740 flight miles with zero casualties, demonstrating exceptional leadership, risk management, and operational precision
  - DoD's first enlisted ELSO-certified ECMO Specialist; developed comprehensive program for others to follow

## Research Projects

- Hierarchical Marine Taxonomy Classification** – *FathomNet 2025 Kaggle Competition* Jun 2025  
 Graduate Research, FAU <https://github.com/C2A2-at-Florida-Atlantic-University/fathomnet>
- Developed a multi-output deep learning model with a ConvNeXt backbone and taxonomy-specific heads to classify marine species across seven hierarchical ranks.
  - Designed a taxonomy-aware training objective incorporating label smoothing and hierarchical loss weighting to improve classification across imbalanced taxa.
  - Contributed to a top-10 finish (8th of 79 teams) in an international competition focused on large-scale marine biodiversity classification.

- Towards Real-Time Fish Monitoring: Optimizing YOLO for Edge Deployment in Marine Environments** Aug 2025  
 Master's Thesis, FAU <https://github.com/C2A2-at-Florida-Atlantic-University/yolo-fish>
- Designed a lightweight, real-time object detection pipeline optimized for underwater imagery using a pruned and quantized YOLOv5 model deployed on NVIDIA Jetson hardware.
  - Developed a custom preprocessing pipeline to enhance underwater image quality, improving mean UIQM by 73.6% with a processing time of 5.7 ms per frame.
  - Integrated the system into a live video stream for continuous species monitoring, supporting marine conservation and ecological research initiatives.

- FAU ElasmoLab Fish Tracker** – iOS app <https://github.com/z3301/SharkLab-FishTracker>
- Research app for iPad, built for the FAU Shark Lab, designed to track fish during aerial surveys
  - Ongoing project, currently on version 2.1; utilizes Swift, UIKit, CoreLocation, CSV Writer

- Plasticiti** – iOS App [https://github.com/swiftaf/plasticiti\\_redesign](https://github.com/swiftaf/plasticiti_redesign)
- Gamified mobile app designed to help stroke & TBI victims develop physical and mental acuity,
  - Selected as one of four finalists from more than 150 submissions in CodePath.org's Miami Demo Day competition
  - Utilizes SwiftUI, MVVM architecture, GameKit, SiriKit, Apple Human Interface Guidelines, W3C WCAG Guidelines

## Awards

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| <b>Department of Defense</b> – SMART Scholarship for Service                                   | Apr 2025 |
| • Nationally competitive full-ride graduate scholarship with \$46,000/year stipend             |          |
| • Includes guaranteed post-graduation employment at a DoD research facility (NSWC Panama City) |          |
| • Supports Ph.D. research in Artificial Intelligence and Autonomous Systems 2025 – 2029        |          |
| <b>NASA</b> – New Technology Report Approval (eNTR #1721162444)                                | Jul 2024 |
| <b>FAU Senior Design Showcase</b> – Judge's Choice Award                                       | May 2023 |
| <b>CodePath.org</b> – Miami Demo Day Finalist  | Apr 2023 |