ISABELLA HUMPHREY
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PUBLICATIONS

- "Incorporating Task-Agnostic Information in Task-Based Active Learning Using a Variational Autoencoder." SciPy 2022.
- "Variational Autoencoders for Semi-Supervised Deep Metric Learning." SciPy 2022.
- “Underwater Depth Calibration Using a Commercial Depth Camera.” ACM WUWNet 2022.
- "Unsupervised Representation of Cilia Video Using A Modular Generative Pipeline." SciPy 2020.

EDUCATION

Georgia Institute of Technology, Atlanta, GA
Master of Science, Computer Science (part-time), expected December 2027

University of Georgia, Athens, GA
Bachelor of Science, Computer Science, August 2023

PROFESSIONAL EXPERIENCE

Analatom Inc., Athens, GA
Software Engineer, February 2024 - present

- Lead Engineer for $2.4M in Department of Defense R&D contracts, developing and delivering end-to-end cloud-based computer vision and machine learning systems for aerospace and defense applications.
- Architected and deployed distributed microservice platforms on AWS, enabling scalable inference, secure data pipelines, and container orchestration.
- Built automated MLOps workflows for data ingestion, model training, registry, and deployment using AWS SageMaker, Docker, and CI/CD pipelines.
- Designed and managed data infrastructure (PostgreSQL, S3-backed object storage) and implemented API services, authentication, secrets management, and logging.
- Proposed and developed advanced CV/ML models — including hyperspectral imaging, diffusion, and multimodal architectures to address DoD use cases such as real-time defect detection, predictive maintenance, and synthetic data generation.
- Directed cross-functional planning, technical execution, and stakeholder delivery across government customers and engineering teams.
- Implemented monitoring, logging, and alerting to support production availability and on-call response

University of California, San Diego, San Diego, CA
Research Intern, June 2022 - August 2022

- Collaborated with the Semmens Lab to collect and analyze video and image data
- Cloud deployed convolutional deep learning pipelines to determine fish length and volumetric data given RGB-D video data
- Developed and calibrated an underwater camera that can identify number and length of fish using AI.
- Built a boat rig to integrate our camera onboard boats to assist in fisheries research.
- Published a paper with ACM WUWNet as second author, titled “Underwater Depth Calibration Using a Commercial Depth Camera”

Quinn Research Group, Athens, GA
Undergraduate Research Assistant, October 2019 - January 2023

- Researched applications for generative deep models in providing clinical tools for diagnosing ciliopathies from cell videos

• Developed segmentation methods to detect cilia in biomedical imaging videos from weakly supervised data

Google Computer Science Summer Institute, Atlanta, GA
Participant, June 2019

• Participated in a three week intensive programming institute learning web app development in HTML, CSS, Javascript, Python, and Google AppEngine at Google.
• Worked in a team of three to create an application called What's That Reference, a custom search engine specifically designed to locate movie quotes, using HTML, CSS, Javascript, Python and Google AppEngine.

SKILLS AND CERTIFICATIONS

• Programming & Systems: Python (primary), C/C++, Bash, Java, JavaScript, Linux/Unix
• Cloud & Infrastructure: AWS (ECS, EC2, S3, RDS, IAM, VPC, SageMaker), Docker, Kubernetes, CI/CD
• Distributed Systems & Data: REST APIs, microservices, PostgreSQL/MySQL, MongoDB, cloud object storage, data pipelines
• DevOps & Tooling: Git, Jenkins, Linux administration, container orchestration, debugging & performance tuning
• AI & Machine Learning: PyTorch, TensorFlow, computer vision, physics-informed, diffusion & multimodal models
• Security & Compliance: USAF Cloud One, IAM & secrets management, CompTIA Security+ (in progress)