Jordan Pierce

Computer Vision, GIS, And Machine Learning For Underwater Habitats

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A problem solver and challenge seeker to the core, I am a goal oriented and resourceful individual who is often appreciated for having the ability to work independently with minimal oversight, and who consistently delivers as promised.

Education

2018-08 - 2020-12

M.S.: Oceanography

University of New Hampshire - Durham, NH

2013-08 - 2016-05

B.S.: Geographic Information Systems

Texas A&M University - College Station, TX

2011-09 - 2013-05

Computer Science

Texas A&M University - Corpus Christi - Corpus Christi, TX

Experience

2022-09 - Current

Marine Data Scientist

CSS Inc. (contracted To NOAA), Silver Spring, MD

- Using machine learning and computer vision to automate the analysis of underwater imagery data collected by SCUBA, ROV, AUV, etc.;
- Creating workflows to efficiently transfer human-made labels of species of imagery data to point clouds and meshes created using SfM;
- Helping to build and maintain code repositories at the division level of the organization;

2020-11 - 2022-06

Computer Vision/Machine Learning Engineer

Terradepth, Austin, TX

- Worked on a small team of software developers to create web-based, ocean data viewing platform, Absolute Ocean;
- Developed pipelines in python for downloading, wrangling, and converting large volumes of unorganized geospatial data;
- Led the efforts in using machine learning algorithms to perform object detection and semantic segmentation on 2D and 3D sonar data;

2018-08 - 2020-12

Graduate Researcher

The Center For Coastal And Ocean Mapping, Durham, NH

- Improved existing machine learning algorithms that automate the annotation of benthic imagery data (e.g., CPCe), performing 8x faster than state-of-the-art;
- Designed workflows to quantify community composition of marine life through classification of 2D images and 3D photogrammetric models;
- Developed deep learning and computer vision algorithms for the detection of marine life and anomalies in benthic and backscatter imagery data;

- Presented research to general and technical audiences through 3-Minute Thesis competition, online podcasts, academic conferences, and multiple publications;

2018-01 - 2018-08 **Research Assistant II**

The University Of Hong Kong, Hong Kong SAR

- Created a prototype and proposal for the use of structurally complex artificial reefs that was later funded by local government for pilot study (USD 200K);
- Investigated 3D modeling techniques such as LiDAR and Structure-from-Motion photogrammetry for quantifying the structural complexity of coral reefs;
- Assisted in proof-of-concept using deep learning algorithms that help prevent illicit trade of endangered species through image classification;
- Worked on a scientific dive team to analyze the long-term health of out planted coral specimens using GIS and image analysis software (ImageJ, CPCe, CoralNet);

2017-02 - 2018-01 **English Language Teacher**

International Personnel Training Centre, Shenzhen, China

- Developed and taught ESL curriculum to improve students' public speaking abilities and dialogue skills;
- Lectured to 60 high-school students, per class;

2015-08 - 2016-07 **Geographic Information Systems Intern**

The Center For The Study Of The First Americans, College Station, TX

- Excavated, curated, and digitized artifacts using photogrammetry and LiDAR;
- Performed spatial analysis of underwater artifacts using ArcGIS;
- Presented at multiple undergraduate conferences, awarded at each;

2015-06 - 2015-07 **Hydrographic Research Intern**

Texas A&M University, Geography Department, Puerto Viejo, Costa Rica

- Led ground-truth mapping of dynamic nearshore environments using custom-made subsurface drogues equipped with GPS and Sonar;
- Handled all data collection, calibration and operation of scientific instruments;
- Constructed digital elevation models and 3D visualizations using ArcGIS;

Research

- **J. Pierce**, Q. Iqbal, E. Martzial, "Absolute Ocean: A Cloud-based Platform with Automatic Detection of Targets in Sonar Data", Canadian Hydrographic Conference (CHC2022), Gatineau-Ottawa, Canada, 2022.
- **J. Pierce**, M. Butler, Y. Rzhanov, K. Lowell, J. Dijkstra, "*Classifying 3D Models of Coral Reefs using Structure-from-Motion and Multi-View Semantic Segmentation*". Frontiers in Marine Science. April, 2021.
- **J. Pierce**, Y. Rzhanov, K. Lowell, J. Dijkstra, "*Reducing Annotation Times: Semantic Segmentation of Coral Reef Imagery*", OCEANS 2020 MTS/IEEE U.S. Gulf Coast - Singapore, 2020.
- **J. Pierce**, "*Automating the Boring Stuff: A Deep Learning and Computer Vision Workflow for Coral Reef Habitat Mapping*" , UNH Graduate Research Conference, 2020.
- *D.M. Baker, V. Yu,* **J. Pierce** *& V. Sheng, "Coral Reef Restoration - is it Viable for Hong Kong?",* The 2nd International Workshop on Eco-shoreline Designs for Sustainable Coastal Development. University of Hong Kong, 2018.
- **J. Pierce**, M. Smith, "*A Preliminary Fabric Analysis on the Spatial Distribution of Artifacts from the Ryan-Harley Site (8JE1004)*", Texas A&M University Student Research Week, 2016.

Honors

- OCEANS 2020 – Student Research Competition, Norman Miller Award, **1st Place.**
- University of New Hampshire's 3-Minute Thesis, **1st Place**.
- CCOM/JHC – **Fully-funded Graduate Research Scholarship.**
- Texas A&M University Student Research Week, **2nd Place.**
- Texas A&M Anthropology Student Research Week, **2nd Place.**
- Society for Underwater Technology: Frontiers in Underwater Tech , **3rd Place.**
- Texas A&M University, College of Geosciences – **Academic Scholarship.**
- George & Barbara Bush Foundation – **Academic Scholarship.**

Skills

Python · Agisoft ·GitHub ·Microsoft Azure ·Docker ·ArcGIS ·Computer Vision ·Machine Learning ·TagLab ·Viscore ·Data Wrangling ·Oceanography ·Sonar ·Bathymetry ·Side Scan Sonar ·PADI Rescue ·NAUI Master ·AAUS Scientific