Joel Nicolow

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EDUCATION

University of Hawaii at Manoa

PhD in Computer Science (Dual Program M.S PhD) — Expected Grad **May 2028**

Master's of Science in Computer Science (Dual Program M.S PhD) — Expected Grad **May 2025**

Bachelor's of Science in Computer Science, Minor Public Health, Honors Student *(3.66 GPA)* — Grad **August 2024**

Relevant Coursework: Algorithms, Database Systems, Big Data Analytics, Data Science Fundamentals, Introduction to Machine Learning, Machine Learning Fundamentals, Machine Learning, Advanced Artificial Intelligence, Deep Learning, Machine Learning Paper Discussion Seminar, Probability and Statistics, Calculus (full series)

TECHNICAL SKILLS & TOOLS

Languages: Python, R, JavaScript

Tools & Frameworks: Pytorch, TensorFlow, Scikit-learn, Numpy, Pandas

EXPERIENCE

Climate Resilience Collaborative, University of Hawaii at Manoa — **August 2024 - Present**

Graduate Research Assistant

- Training and evaluating **U-net** and other convolution-based image segmentation models in **Pytorch** and **TensorFlow** to segment coastal features such as beach area and the landwater interface.
- Created an open-source **Python** Framework named CoastVision which downloads PlanetScope imagery for a given area of interest, then segments the shoreline in each image https://github.com/Climate-Resilience-Collaborative/CoastVision
- CoastVision framework was used to measure coastal erosion rates across the island of Oahu which are used to inform policy decisions

Water Resources Research Center, University of Hawaii at Manoa — **October 2024 - Present**

Machine Learning Engineer

- Training and evaluating **image classification** and **regression models** with **ResNet** backbones in **Pytorch**
- Predicting fog presence and visibility from trail camera images on Hawaiian mountains using these models

Climate Resilience Collaborative, University of Hawaii at Manoa — **March 2022 - August 2024**

Introductory Remote Sensing Specialist

- Worked with PlanetScope **API**s in **Python** to download satellite imagery
- Trained and evaluated pixel classification models in **Scikit-learn** to segment satellite imagery
- Created maps and figures in **QGIS**
- Oral Presentation at the 2023 Pacific Rim Geospatial Conference in Honolulu
- Lightning talk at Planet Lab's "Rise of the Planetary Variables" event at Planet Headquarters in San Francisco, December 2023

Hawaii Established Program to Stimulate Competitive Research Change(HI) — **March 2023 - May 2024**

Undergraduate Researcher

- Used **computer vision** techniques in **Python** to extract useful features from trail camera images
- Trained and evaluated **machine learning models** using **Scikit-learn** to classify fog presence in trail camera images based on engineered image features
- Poster presentation at the 2023 American Geophysical Union's Fall Meeting in San Francisco

- Poster Presentation at the 20204 Hawaii Conservation Conference
- Awarded Outstanding Undergraduate Student Poster Presentation at the 2024 Hawaii Conservation Conference

The University of Hawaii Manoa, Honolulu Community College **March 2021 - March 2023**

Undergraduate Researcher

- Trained and evaluated **machine learning model**s using **Scikit-learn** to classify fog presence in trail camera images based on engineered image features
- Created **Python** framework to process relative humidity, temperature, and dew point data from multiple meteorologic stations
- Successfully attained funding from the Associated Students of the University of Hawaii
- Co-author on published poster in the Hawai'i Conservation Conference July 2022
- Co-author on published poster in the American Geophysical Union December 2022

Pacific Health Analytics Collaborative, University of Hawaii Manoa **September 2019 - March 2022**

Research Assistant

- Created **R** frameworks to automate **web scraping** of data dashboards
- Generated aggregate data tables from observation-level data using **LaTex** and **R**
- Helped develop the Hawaii Behavioral Health Dashboard using **R**, **Power BI**, **JavaScript**, **HTML**, and **CSS**
- Co-author on Hawaii Opioid Initiative Evaluation Report 2020
- Co-author on Hawaii State Plan for a Data-Driven System of Care on Substance Use 2022

PROJECTS

CoastVision | *Python* |https://github.com/Climate-Resilience-Collaborative/CoastVision

- Open-source **Python** framework geared towards generating satellite-derived shorelines in PlanetScope imagery. Given a time window and an area of interest CoastVision will download applicable PlanetScope satellite imagery, extract shorelines, and compute transect intersections.
- CoastVision was used by the Climate Resilience Collaborative to measure coastal erosion rates across the entire island of Oahu using PlanetScope Imagery

Neural Network Built in Numpy | *Python* | https://github.com/jnicolow/numpy_neural_network

- Created linear neural network layer and sequential model classes in **Python** using only **Numpy**
- Trained example network on MNIST dataset with 94% accuracy

EXTRACURRICULAR ACTIVITIES

Association of Computational Machinery | *Member* **March 2021 - Present**

- Attend meetings on Algorithms (subgroup: Pandas)
- Attend general assembly meetings