

Accomplished early career professional with previous work in computational plant science, data analytics, and pipeline development for the world's largest plant phenotyping robot: the Field Scanalyzer at the University of Arizona Maricopa Agricultural Center. Experience with machine learning, container development, and big data management. Highly skilled in communication and project planning with a creative, proactive, and hard-working nature.

CORE QUALIFICATIONS

- Python Programming Language
- Computer Vision
- Container Development
- Big Data Management and Analysis
- High Performance Computing
- Distributed Pipeline Development
- High-Throughput Plant Phenotyping
- Machine Learning Model Deployment

PROGRAMMING LANGUAGES, TECHNOLOGIES, AND PACKAGES

Languages and Technologies: Python, R, SQLite, Windows, WSL, Shell, Bash, Linux, Jupyter, Git, Docker, Singularity, QGIS, IRODS, CyVerse Discovery Environment, Blender, Unity, Slack API

Python Packages: Pandas, GeoPandas, GDAL, Rasterio, Open3d, Pyransac, Shapley, Pytorch, Tensorflow, Scikit-Learn, Numpy, OpenCV, Detecto, Pyinstaller, Subprocess, Matplotlib, Seaborn, PyGUI, Tkinter

EXPERIENCE

Development

- Machine-learning model implementation using Pytorch and Tensorflow
- Containerization and deployment of python scripts using Docker and Singularity on HPC systems
- Hierarchical clustering using Scikit-Learn to track individual plants throughout the growing season
- Calculation of vegetation indices from multi-modal RGB data using GDAL, Rasterio, and OpenCV
- Relational database development using SQLite for increased data availability for collaborators
- VR development for phenomic data exploration using Unity and C#
- Creation of an end-to-end satellite time series multi-spectral index processing framework
- RANSAC shape fitting based model assisted labeling for 3D segmentation algorithm training
- Algorithm and data visualization animations using Blender, featured in the Wall Street Journal
- Cross sensor and cross platform time series data fusion
- Petabyte scale data management using command line data management tools

Data Collection

- Evaluated wandering transects as a method for estimating invasive juvenile *Pinus clausa* stand densities
- Captured photosynthetically active radiation using ceptometers
- Built and used a mobile imaging station for the analysis of leaf samples
- Measured cotton canopy temperature using handheld FLIR thermal sensor.
- Used FloroPen sensor to capture OJIP and NPQ measurements in cotton
- Surveyed water quality parameters using a Horiba Multiparameter Water Quality Meter

Management

- Mentored two undergraduate computer science students in Data Science projects
- Created and managed firearms paperwork reviewed by the Bureau of Alcohol Tobacco and Firearms
- Directed a team of ten sales associates
- Five years of managerial experience

EDUCATION

COLLEGE OF COASTAL GEORGIA

B.S. in Biology concentration General Biology

Minor: Data Analytics

Minor: Environmental Science

GPA: 3.83

EMPLOYMENT

Research Data Support Specialist, Pauli Lab, University of Arizona, Tucson, AZ. 2020-Present

TRiO Student Support Services Tutor, The College of Coastal Georgia, Brunswick, GA. 2019-2020

GIS Supplemental Instructor, The College of Coastal Georgia, Brunswick, GA. 2020

Closing Manager, Dick's Sporting Goods, Brunswick, GA. 2018-2020

HIGHLIGHTED PRESENTATIONS

Travis T. Simmons, James B. Deemy. 2022. LINDEX, an End-to-End Landsat-8 Timeseries Processing Framework. American Geophysical Union Frontiers in Hydrology Meeting. Accepted.

Travis T. Simmons. 2022. Discovering Plant Phenomics. College of Coastal Georgia Department of Natural Sciences Colloquium.

Emmanuel Gonzalez, Ariyan Zarei, Nathaniel Hendler, Michele Cosi, Jeffrey Demieville, **Travis T. Simmons**, et al. 2022. PhytoOracle: Scalable, modular phenomic data processing pipelines. North American Plant Phenotyping Network. DOI: <https://doi.org/10.1002/essoar.10508789.1>

Travis T. Simmons. 2021. Data Investigation and Communicating Data Analysis. College of Coastal Georgia Foundations of Data Science. Guest Lecture.

Emmanuel Gonzalez, **Travis T. Simmons**, Ariyan Zarei, Michele Cosi, et al. 2021. PhytoOracle: A scalable, modular data processing pipeline for phenomic data. Phenome Force. Virtual Workshop.

RELEVANT COURSEWORK

Biology & Ecology: Principles of Biology I & II, Cell and Molecular Biology, Biological Research Methods, Botany, Medicinal Botany, Mycology, Zoology, Plant Anatomy & Physiology, Ecology, Coastal Ecology, Genetics, Marine Biology

Chemistry: Principles of Chemistry I & II, Organic Chemistry I

Math & Data Science: Calculus I, Elementary Statistics, Geographic Information Systems, Computing for Scientists and Engineers, Foundations of Data Science, Database Management Systems, Data Mining & Machine Learning