DYLAN R. STEWART

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EDUCATION

Ph.D. Candidate in Electrical Engineering — Expected May 2022

University of Florida, Gainesville, FL

- Concentration in Machine Learning and Pattern Recognition
- Faculty Advisor: Dr. Alina Zare
- Dissertation: "Improving Alignment and Overall Scene Understanding for Multi-look Remote Sensing Modalities"

Bachelor of Science in Engineering Physics — May 2017

Murray State University, Murray, KY — **Summa Cum Laude**

- Concentration in Signal Processing

RESEARCH EXPERIENCE

NREIP Graduate Intern | Naval Surface Warfare Center, Panama City Beach, FL

Domain translation: Converting sonar intensity images into bathymetry maps to improve multi-image alignment — May 2021 – July 2021

- Investigate domain-appropriate keypoint detectors for image registration
- Conduct drone-mounted hyperspectral surveys for shallow water target detection

Graduate Research Assistant | University of Florida

CESU - Hurricane effects on the distribution and management of plant invasions in coastal habitats — October 2020 – Present

- Developed approaches to measure invasive species in the Everglades using hyperspectral sensors
- Gathered field measurements using mobile spectrometers and a cablecam-mounted hyperspectral camera

Superpixel Segmentation and Texture Feature Learning for Multi-Aspect Underwater Scene Understanding — May 2020 – Present

- Derived approaches for aligning seafloor imagery captured from multiple aspects
- Crafted novel simulated seafloor dataset via collaboration with acoustics experts
- Implemented state-of-the-art deep learning algorithms in PyTorch

MRA: Disentangling Cross-scale Influences on Tree Species, Traits, and Diversity from Individual Trees to Continental Scales — Jan 2020 – Present

- Produced novel quantitative metrics for tree crown delineation
- Developed novel superpixel segmentation approaches for tree crown segmentation

Coordinated Adaptive Phenotyping (CAPs) for Improving Soil Water Acquisition — Aug 2018 – Dec 2020

- Captured drone mounted hyperspectral imagery for drought studies in sesame plants
- Produced temporal hyperspectral dataset

Improved system assessment of aflatoxin risk utilizing novel data and sensing — Aug 2018 – Dec 2020

- Captured drone mounted hyperspectral imagery to detect aflatoxin in peanuts
- Produced temporal hyperspectral dataset

Multi-aspect Underwater Scene Understanding — May 2017 – May 2020

- Developed quantitative metrics for seafloor segmentation
- Developed novel superpixel algorithms for seafloor segmentation
- Coded machine learning algorithms in MATLAB and Python

Undergraduate Research Assistant | Murray State University   Aug 2015 – May 2017
Ultrasonic Fatigue Assessment of Jet Engine Components
- Used MATLAB to analyze nonlinear ultrasonic measurements
- Presented research findings at the Kentucky Academy of Sciences conference 2016
- Co-authored 3 conference publications

TEACHING & MENTORING

Graduate Mentor | University of Florida   May 2019 – Present
Multi-aspect Underwater Scene Understanding\Superpixel Segmentation and
Texture Feature Learning for Multi-Aspect Underwater Scene Understanding
- Lead and directed 2 undergraduate students on research projects
- Guided students in coding machine learning algorithms, experimental design and technical writing
- Disseminated research findings through co-authoring multiple papers

Supervised Teaching | University of Florida   Aug 2019 – Dec 2019
Statistics for Electrical and Computer Engineering
- Taught over 30 students in undergraduate-level statistics course
- Provided lecture on distance measures between high-dimensional distributions
- Held weekly office hours

GRE Instructor | University of Florida   June 2019 – Aug 2019
GRE Quantitative Review
- Developed syllabus, lectures, and assignments for GRE Quantitative Exam
- Taught over 60 students in undergraduate-level mathematics through weekly lectures

Supervised Teaching | University of Florida   May 2019 – Aug 2019
Deep Learning Workshop
- Taught over 30 exchange students in undergraduate-level Deep Learning course
- Provided lectures on the multi-layer perceptron and image classification
- Lead group review sessions

GRE Instructor | University of Florida   June 2018 – Aug 2018
GRE Quantitative Review
- Developed syllabus, lectures, and assignments for GRE Quantitative Exam
- Taught over 40 students in undergraduate-level mathematics through weekly lectures

Lab Coordinator | Murray State University   Aug 2015 – May 2017
Engineering Physics Labs
- Developed new laboratory classwork
- Designed demonstrations for community outreach

Teaching Assistant | Murray State University   Aug 2014 – May 2017
Engineering Physics Labs
- Taught laboratory material for mechanics, electromagnetism, and astronomy
- Evaluated students on laboratory and class performance

HONORS AND AWARDS

Wilson and Marie Collins Endowment for Graduate Fellowship, $12,740 Fall 2019
Merit based scholarship to support graduate studies at the University of Florida

Graduate School Preeminence Award, $218,130 Fall 2017
Pinnacle award for incoming PhD students (5 year) at the University of Florida

Society of Physics Students Outstanding Senior Spring 2017
Merit based award for top Engineering Physics student at Murray State University

2nd Place Overall Engineering Research Presentation Fall 2016
Runner up engineering research presentation at the Kentucky Academy of Sciences 2016

Johnny Russel Endowment Scholarship, $1000 Fall 2015
Merit based award for Engineering Physics students

Bill Taylor Physics Scholarship, $1000 Fall 2015
Merit based award for Engineering Physics students

Regents Academic Achievement Scholarship, $26,880 Fall 2013
Merit based scholarship to support undergraduate studies at Murray State University

Kentucky Educational Excellence Scholarship, $11,096 Fall 2013
Merit based scholarship from the Kentucky Higher Education Assistance Authority

PUBLICATIONS

Under Review/In Preparation

- **D. Stewart**, A. Zare, S. Marconi, B. Weinstein, E. White, and S. Bohlman, "Addressing annotation uncertainty for tree crown delineation using the rand index," in Preparation.
- B. Weinstein, S. Graves, S. Marconi, A. Singh, A. Zare, **D. Stewart**, S. Bohlman and E. P. White, "A benchmark dataset for individual tree crown delineation in co-registered airborne RGB, LIDAR and hyperspectral imagery from the National Ecological Observation Network." Under Review

Published

- **D. Stewart**, A. Hampton, A. Zare, J. Dale, and J. Keller, "The Weakly-Labeled Rand Index," in *IEEE IGARSS 2021*, In Press.
- **D. Stewart** Sergio Marconi, IDTREES competition 2020 evaluation code (Version 1.0). Zenodo. http://doi.org/10.5281/zenodo.3833216, May 2020
- **D. Stewart**, A. Zare, and J. T. Cobb, "Quantitative Evaluation Metrics for Superpixel Segmentation," in *Proc. SPIE 10628, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXIII*, Orlando, 2018.
- G. Bunget, B. Tilmon, A. Yee, **D. Stewart**, J. Rogers, M. Webster, K. Farinholt, F. Friedsdorf, M. Pepi, and A. Ghoshal, "Novel Approach of Wavelet Analysis for Nonlinear Ultransonic Measurements and Fatigue Assessment of Jet Engine Components," in *44th Annual Review of Progress in Quantitative Nondestructive Evaluation*, Provo, 2018.
- G. Bunget, A. Yee, **D.Stewart**, J. Rogers, S. Henley, C. Bugg, J. Cline, M. Webster, and K. Farinholt. "Flaw Characterization Through Nonlinear Ultrasonics and Wavelet Cross-Correlation Algorithms," in *44th Annual Review of Progress in Quantitative Nondestructive Evaluation*, Provo, 2018.
- A. Yee, **D. Stewart**, G. Bunget, P. Kraymer, K. Farinholt, F. Friedersdor, M. Pepi, and A. Ghoshal. "Nonlinear Ultrasonic Measurements Based on Cross-Correlation Filtering Techniques," in *43rd Annual Review of Progress in Quantitative Nondestructive Evaluation*, Atlanta, 2017.

REFERENCES

Alina Zare, Prof. of Electrical and Computer Eng.
University of Florida, Gainesville, FL | 352-273-2604 | azare@ece.ufl.edu

Paul Gader, Prof. of Computer & Information Science & Eng. | Sustainable Infrastructure & Environmental Eng.
University of Florida, Gainesville, FL | 352-294-1629 | paul.gader@essie.ufl.edu

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