

Aidan Draper

RESEARCH SCIENTIST

📞 (845) 926-6960 | ✉️ adraper2@nd.edu | 🌐 [adraper2](#) | **in** [aidan-draper](#)

Education

University of Notre Dame

PHD IN COMPUTER SCIENCE, ADVISOR: DR. ADAM CZAJKA

Notre Dame, IN

Jun 2019 - PRESENT

Elon University

BS IN COMPUTER SCIENCE, BS IN STATISTICS, GPA: 3.6/4.0

Elon, NC

Aug 2015 - May 2019

Research

Depth estimation from multiview scenes and connecting neural topology to the human brain through the context of emotional response from layer-focused images. Currently working towards applications of these models in areas such as Psychology, Computer Vision, and Biometrics.

Skills

Languages Python, C++, R, JavaScript, C

Libraries Keras, Tensorflow <2.0, PyTorch (intermediate), Tensorflow 2.0 (intermediate)

Experience

University of Notre Dame

RESEARCH ASSISTANT

Notre Dame, IN

Jun 2019 - PRESENT

- Investigating the use of multiview scene rendering for distortion correction modelling on 3D fingerprint images for improved minutiae map matching accuracy with 2D fingerprints. I also study how artificial representations of the brain may represent major regions of the brain based on visual stimuli from images. I work on these challenges with Dr. Adam Czajka and others in the Computer Vision Research Lab (CVRL).

University of Notre Dame

TEACHING ASSISTANT

Notre Dame, IN

Aug - Nov 2020

- Assisted Dr. Kevin Bowyer in Case Studies in Computing-Based Entrepreneurship in the Fall of 2020. My primary responsibilities were holding office hours and grading weekly assignments.

Elon University

TEACHING ASSISTANT

Elon, NC

Feb - May 2019

- Assisted with teaching, as well as held review sessions and office hours for STS 347 - Statistical Computing and Simulation Theory in R.

Elon Center for Organizational Analytics

DATA SCIENCE INTERN

Elon, NC

Feb 2018 - May 2019

- Lead a team in investigating a large IoT dataset in order to build a predictive model to measure machine efficiency.
- Used python, R, and Tableau to manipulate data, create a classification algorithm, and visualize the data story within a dashboard.

University of Notre Dame

SUMMER RESEARCH ASSISTANT

Notre Dame, IN

Jun - Aug 2018

- Built a classifier to measure grass species abundance using remote sensing and Landsat satellite image processing in R.
- Reconstructed a Bayesian hierarchical model that used a Poisson point process and parallelized it to create a execution time speedup of 2x.

Elon University

WEB DEVELOPER INTERN

Elon, NC

Jun - Aug 2018

- Worked with the Communications team to update content on a non-profit website run by the university and migrate data to a new CMS.

Projects

3D to 2D Unconstrained Fingerprint Flattening from Video (Current Research)

- Mimicking left-right consistency from a single unconstrained camera to produce finger depth clouds for the purpose of flattening 3D contactless fingerprints to improve verification of contactless to contact-based matching.

Subliminal emotion-evoking signals in learning-based visual stimuli (*Current Research*)

- Searching for signals of specific emotional response from subjects when analyzing images produced at specific layers of networks to better understand network topology in relation to our knowledge of the human brain.

aidandraper.com

- Taught myself enough of the ReactJS library to rebuild my portfolio site with reusable containers.
- Hosting on GitHub Pages and pay just \$10 for the site yearly.

Survey on Image Quality Loss from Image Denoising

- Designed an RShiny app survey that asked participants to rate the appearance of poorly-exposed images that were "denoised" using filters, such as Bilateral and Non-local Means filters, in comparison to properly exposed low-light photos.
- Collected data on 100 college students and performed an ANOVA and ANCOVA to analyze variance and covariance between participants' filter opinions in comparison to standard image quality scores, like SSIM and PSNR.

Manhattan College Business Analytics Competition

- Analyzed 10 million rows of NYC contract spending and allocation data with three teammates, built a logistic regression model to predict contract allocation across minority groups, created a data story, and then, presented a poster on our findings.
- Constructed a Glassdoor web-scraper overnight in order to collect employee review data on companies in NYC and ran a sentiment analysis on employees' reviews of businesses. Placed **fourth out of 18 teams** and won the **Best Poster Award**.

HanesBrand Data Analytics Competition

- Collaborated with two teammates to implement three data mining algorithms, including a sentiment analysis, association rules, and entity matching on more than 1.8 million rows to give insight into consumer reviews for Champion products. Placed **first out of twenty teams**.

Music Lyrics Study

- Pulled song data from the Spotify API and song lyrics from the Genius API and hosted the database in a MySQL relational database online.
- Implemented an LDA to model topics in song lyrics, ran a sentiment analysis using Vader, and visualized the results in Tableau.

Publications

Journal Articles

1. Under review.

Conference Articles

1. Coming soon.

Presentations

1. "Investigating Image Quality Loss," with Laura Taylor, oral presentation at the *UNC, Greensboro Regional Mathematics and Statistics Conference*, Greensboro, NC, November 2018.
2. "Investigating image quality loss while using statistical methods to filter grayscale Gaussian noise," with Laura Taylor, video presentation at the *Electronic Undergraduate Statistics Research Conference*, November 2018, <https://www.causeweb.org/usproc/eusrc/2018/virtual-posters/3>.
3. "Classifying Marshland Plant Species by Processing Light Reflectance in Satellite Images," with Luke Onken and Jason McLachlan, poster presentation at the *University of Notre Dame Summer Research Symposium*, Notre Dame, IN, July 2018.

Activities

Graduate	Cycling Club Media Manager and Race Team Member
Undergraduate	βΘΠ Founding Father, Photo Club President, Statistics Club Member, Tiny Home Project
Interests	Soccer (YNWA), Cycling, Guitar, Ecology, Kayaking, what my friends call "Elevator Music", Photography