Daniel Highland

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EDUCATION

M.S. in Computer Science **Jul. 2023**

The College of William & Mary

Thesis Title: "Amsel Criteria Based Computer Vision for Bacterial Vaginosis Diagnosis"

Committee: Huajie Shao, Qun Li, and Gang Zhou (Chair)

B.S. in Chemistry (summa cum laude) **May 2021**

The College of William & Mary

RESEARCH AND WORK EXPERIENCE

Research Associate **Sep. 2023-Feb. 2025**

Product Quality and Compliance Department, FHI 360

- Conducted research on methods to enable low/middle-income country adoption of handheld Near-Infrared (NIR) Spectrometers for pharmaceutical quality control.
- Applied multivariate chemometric data analysis, machine learning models, and statistical methods via Python, R, and Shiny for efficient spectral data processing and analysis.
- Created data visualizations and reports to direct internal projects and for publications.

Spectroscopy Intern **May 2023-Aug. 2023**

Product Quality and Compliance Department, FHI 360

- Developed and maintained training documentation and demos to facilitate the understanding of spectroscopy by external parties.
- Demonstrated proficiency with Python, R, and data visualization for providing actionable insights.

Graduate Researcher **Dec. 2021-Jul. 2023**

HealthComp Lab (Advisor: Gang Zhou), The College of William & Mary

- Conducted deep-learning based research on healthcare applications
- Utilized PyTorch for computer vision on epithelial cells for a highly sensitive prediction of bacterial vaginosis.

Undergraduate Researcher **Aug. 2018-Dec. 2020**

Wustholz Lab (Advisor: Kristin Wustholz), The College of William & Mary

- Conducted research on Surface Enhanced Raman Spectroscopy (SERS) approaches to pH detection with rhodamine-based dyes for cancer cell identification.
- Trained new lab members on spectroscopy techniques/safety and instrument troubleshooting

Data Science Intern **Oct 2020-May 2021**

AidData, The College of William & Mary

- Performed coding for bias level and conducted web research to determine media ownership of Eastern European news outlets as part of the Eastern European Bias Project
- Researched sentiment lexicons for news article classification and assessed translation/transparency quality

PUBLICATIONS AND POSTERS

Highland, D. & Zhou, G. (2024). Amsel criteria based computer vision for diagnosing bacterial vaginosis. *Elsevier Smart Health, 33*. https://doi.org/10.1016/j.smhl.2024.100501

Highland, D. & Zhou, G. (2022). A review of detection techniques for depression and bipolar disorder. *Elsevier Smart Health, 24*. https://doi.org/10.1016/j.smhl.2022.100282

Highland, D., Eady, M., & Jenkins, D. (2024, October 23). Environmental contributions and nonsample related impacts on the spectra from a handheld diffuse reflectance spectrometer. Poster at *SciX 2024*, Raleigh, NC, United States.

Eady, M., Highland D., & Jenkins, D. (2024, October 23). Tuberculosis medications and nondestructive compliance screening with comparison of handheld and benchtop diffuse reflectance spectrometers. Poster at *SciX 2024*, Raleigh, NC, United States.

TECHNICAL SKILLS

Programming Languages: Python (PyTorch, NumPy, Pandas, scikit-learn), R, SAS, SQL

Data Visualization: Shiny, PowerBI

Chemistry: Spectroscopy, Analytical Chemistry

Other: Github

Certifications

Duke University: Introduction to Genetics and Evolution	**April 2024**
John Hopkins: Algorithms for DNA Sequencing	**August 2024**
Google UX Design Specialization	**March 2025**
SAS Professional Programmer	**March 2025**

HONORS AND AWARDS

Merck Index Award, The College of William & Mary Department of Chemistry **May 2021**

NOTABLE COURSEWORK

Organic Spectroscopy (CHEM 458)	**Fall 2020**
Computational Chemistry (CHEM 408)	**Spring 2020**
Databases (DATA 311)	**Spring 2021**
Analysis of Algorithms (CSCI 653)	**Fall 2021**
Data Visualization (CSCI 780)	**Spring 2022**
Design of Experiments (CSCI 688)	**Fall 2022**
Deep Representation Learning (CSCI 780)	**Fall 2022**