Wesley Meredith

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Education

NC State University **Aug. 2023 – May 2025**
M.S. in Computer Science *Raleigh, NC*

Clemson University **Aug. 2018 – July 2023**
B.S. in Biochemistry *Clemson, SC*
MSCS Ready Program

Relevant Coursework

- Machine Learning
- Data Mining
- Data Structures
- Operating Systems
- Software Engineering
- Computer Architecture
- Algorithmic Analysis
- UI/UX Design

Projects

Housing Price Prediction Challenge | *Python, scikit-learn, TensorFlow, Keras* **Machine Learning**

- Conducted comprehensive Exploratory Data Analysis (EDA) to gain insights into the Ames Housing dataset, identifying key patterns and trends, and communicating through insightful data visualizations via Seaborn and Matplotlib.
- Enhanced prediction accuracy by 15% through implementation and optimization of decision tree, random forest, XGBoost, and ANN models.
- Secured a top 12% ranking (among 24,000 participants) on Kaggle's housing price prediction challenge by applying machine learning algorithms, feature engineering, and hyperparameter tuning techniques via scikit-learn grid search.
- Addressed data quality issues and imbalanced classes through targeted data cleaning and imputation techniques, leading to a 5% boost in prediction accuracy and improved model robustness.

Spotify 'Wrapped' Clone | *Python, Flask, Spotify API, HTML, CSS* **Full-Stack Development**

- Developed and deployed a Python-based Flask web application integrated with the Spotify API. Enabled users to visualize personalized Spotify 'wrapped' data, including top artists and tracks, enhancing the overall music discovery experience.
- Engineered a highly secure OAuth2 authentication mechanism using the Spotify Web API python library, resulting in a seamless and reliable user login experience; improved data privacy and protected sensitive user information.
- Designed and implemented a webpage to present the user's top artists in an organized and visually appealing manner.

Drowsiness Detector | *Python, OpenCV, dlib* **Computer Vision**

- Developed a real-time, webcam based drowsiness detection system utilizing computer vision techniques (OpenCV, dlib) with a focus on addressing Zoom meeting fatigue and enhancing personal productivity.
- Implemented a sophisticated EAR (Eye Aspect Ratio) threshold algorithm for accurate detection of drowsiness, allowing for personalized alerts tailored to individual drowsy patterns and preferences.
- Incorporated the dlib toolkit to analyze facial landmarks, enabling precise detection of eye movements and contributing to a swift response to drowsiness cues.

Experience

Research Analyst (Full Time) **The Hall Lab, NC State University**
Raleigh, NC *September 2022 - January 2024*

- Ensured accurate and informative data analysis for experiments by utilizing linear regression, GraphPad, and Excel software, leading to clear and impactful presentations of research findings.
- Analyzed RNA sequencing data to reveal novel downstream targets of cellular proteins in skin cancer cells, leading to valuable insights for future research directions.

Computational Biology Research Assistant **The Birtwistle Lab, Clemson University**
Clemson, SC *November 2019 - May 2022*

- Published a peer-reviewed paper on predicting cancer cell combination therapy outcomes using a Python and MATLAB based Markov model.
- Applied integrated differential equations, drug dose response modeling, and optimization techniques to gain insights into complex cellular behaviors.
- Streamlined laboratory workflows by programming an Opentrons OT-2 robot via Python for automated tasks, saving researchers time and improving efficiency.

Technical Skills

Languages: Python, R, C++, C, HTML, CSS, SQL, LaTeX
Developer Tools: Docker, Kubernetes, VS Code, Git, GitHub
Frameworks/Libraries: Pandas, Flask, Scikit-learn, Seaborn, TensorFlow, PyTorch, NumPy, Matplotlib, OpenCV