

# Akhilesh Pathange

Akhipath03@gmail.com | 804-300-4082 | <https://akhipath03.github.io/Portfolio/>

## Education

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**College of William and Mary:** B.S in Data Science, Minor in Mathematics, GPA 3.95

May 2025

**Relevant Coursework:** Algorithms, Data Structures, Probability & Statistics for Scientists, Advanced Applied Machine, Learning, Statistical Data Analysis, Data Visualization, Databases, Linear Algebra, Discrete Mathematics

## Technical Skills

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**Languages:** Python, SQL, R, JavaScript, C++, HTML, CSS

**Tools Proficiency:** Pandas, NumPy, Scikit-learn, PyTorch, Matplotlib, Jupyter Notebook, Tableau, Snowflake, SSMS, AWS, Git, React Native, Tkinter, Powershell

## Relevant Experience

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**CostarGroup** | Data Analyst Intern

June 2024 – August 2024

- Utilized SQL in SSMS and Snowflake to analyze usage patterns and predict user activity, developing complex queries for extracting and preprocessing data related to sale listings and property features.
- Created a Python script to fetch data from Snowflake and seamlessly integrate it into SSMS, enhancing accessibility.
- Implemented Isolation Forest for usage anomaly detection, identifying unusual patterns in user behavior and developed detailed visualizations of usage trends using statistical analyses (t-tests, ANOVA) to validate data relevance.
- Led a project to create a machine learning model to classify office building images by their architectural style, introducing a new dimension for property discovery.

**Hudson Institute** | Center for Defense Concepts and Technology Spring Intern

March 2024 – June 2024

- Developed a war game simulation project with a GUI for data management and simulation outcomes.
- Created a GUI budget tool for Excel integration, enabling real-time updates and interaction with spreadsheet data.
- Implemented backend functionality to dynamically update values based on simulation results.
- Designed a map visualization tool to display troop movements and outcomes during simulated turns.

## Personal Projects

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### ASL Alphabet Classification using Neural Networks

- Developed and deployed machine learning models to recognize and classify American Sign Language (ASL) alphabets, achieving the highest accuracy with AlexNet in real-time recognition of over 87,000 images, resulting in a robust system for instantaneous predictions of ASL letters.
- Created comprehensive preprocessing pipelines, including image augmentation and normalization, to prepare the dataset for model training.
- Implemented and compared various neural network architectures including Deep Neural Networks (DNNs), Convolutional Neural Networks (CNNs), AlexNet, and ResNet34, with comprehensive preprocessing and hyperparameter optimization.
- Authored a research paper detailing the methodologies, experiments, and findings of the ASL classification project.

### Nutrition Insight Mobile App

- Developed an intuitive mobile application with React Native, enabling users to capture ingredient labels via camera.
- Implemented seamless user authentication through AWS Cognito, providing personalized experiences based on attributes like age, allergies, and health concerns.
- Utilized AWS Lambda for efficient image uploads and processing, integrating Lambda, S3, and Textract for streamlined image analysis and text extraction.
- Utilized OpenAI API to dynamically generate personalized and detailed insights about extracted ingredients, ensuring users are informed about potentially harmful substances in products.