Rayne K. Wilde

Rayne.K.Wilde@gmail.com | 763-238-2984 | LinkedIn | Portfolio

Professional Experience

Data Science Professional

GDIT | Colorado Springs, CO | Hybrid | February 2025 – Present
Titles: Data Scientist, Machine Learning Engineer, Software Engineer, Data Analyst

Overview

Primarily responsible for developing data science solutions for analysts and the DoD. Responsibilities vary from project to project and depend on customer needs. Deploying containerized apps on protected networks and embedded systems.

Key Projects:

- Unsupervised Anomaly Detection: Developed an ML model to identify anomalies in advance, alerting analysts to potential issues
- Dockerized Applications: Developed Multiple Frontend and backend containerized applications to support the intelligence community
- Text Extraction Location: NLP techniques to extract locations in nested patterns from general to specific and apply geocoordinates.
- Knowledge Graph Optimization: Enhanced scalability, search relevance, and reduced latency for large datasets.
- Generative AI Search: Integrated phonetic matching, synonym handling, and semantic search within vector databases.
- Hybrid Search System: Engineered a custom ElasticSearch alternative using FAISS, Weaviate, and ANN.
- Automated Vulnerability Scanner: Developed a YARA scanner to detect malicious code using CVE and MITRE ATT&CK standards.

Data Science Professional

Occam Solutions | Fayetteville, NC | Hybrid | June 2023 – January 2025
Titles: Data Scientist, Machine Learning Engineer, Data Analyst

Overview:

Lead Machine Learning Engineer for a data science team. Tasked with providing language-agnostic NLP-specific insights, analysis, and data handling.

Key Projects:

- Stance and Sentiment Detection: Developed models to classify tone and stance, with analysis pipelines for sentiment insights.
- Data Compression and Deduplication: Improved storage efficiency by streamlining datasets with data cleaning and clustering.
- Data Analysis Platform: Created a scalable library for document tagging, grouping, and clustering to support various analysis goals.
- NLP ETL Pipeline: Developed a language-independent pipeline for data extraction, normalization, multi-stage compression, deduplication, and embedding preprocessing.

Enlisted Airmen

United States Air National Guard | Des Moines, IA | In-Person | August 2017 – August 2023
Title: Intelligence Analyst

Overview

Enlisted service member in the Air National Guard, retired as an Intelligence NCO.

Other Professional Projects:

- Text Analytics: Developed a program linking work logs to project success probabilities utilizing SQL Server.
- Market Analysis: Analyzed application data to generate insights on user behavior and engagement patterns.
- Ion Routing Optimization: Applied search algorithms to improve quantum compiler efficiency and support experimental physics.
- Ion Simulation Sandbox: Created a simulation environment for ion movement, facilitating flexible experimental setups.
- Document Classification: Developed an ANN classification with tagging and cluster analysis pipeline.
- Multi-Stage Data Aggregation: Created a document workflow for classification, summarization, and clustering to enhance insights.

Education

Doctor of Philosophy in Computer Science	University of Colorado	May 2030
Bachelor of Science in Software Engineering	Iowa State University	May 2025
Bachelor of Science in Data Science	Iowa State University	May 2025
Associate of Applied Science in Intelligence Studies and Technologies	Community College of the Air Force	August 2020

Research Groups

Quantum-Classical AI and Software Engineering

Graduate Research Assistant | Hybrid | November 2025 - Present | Link

Soley Research Group

Predoctoral Researcher | Remote | August 2024 – November 2025 | Link

Description:

Led the development and deployment of ADAPT-VQE, emphasizing the optimization of adaptive ansatz and strategies for error mitigation to progress quantum computing within our team. Enhanced existing HPC scripts and Docker setups, increasing efficiency and supporting both classical and quantum computing tasks. Also, contributed to refining quantum noise and error models, improving the reliability of quantum experiments.

Project:

- ADAPT-VQE: Developed an adaptive variational algorithm for efficient quantum energy calculations, integrating custom noise models and operator selection for optimized ansatz circuits.

Explainable AI for Source Code Applications

Research Enigneer | Hybrid | August 2024 – May 2025 | Link

Description:

Built a core library and pipeline focused on understanding neuron activation in code-trained large language models (LLMs), emphasizing feature extraction and automated dataset annotation. Developed an auto-labeling system utilizing AST tools, regular expressions, and LLM-generated labels to aid in clustering and tagging latent code representations. Established metrics and evaluation tools for tag coverage, cluster alignment, and latent concept accuracy, enhancing the interpretability of model features. Created an interactive web visualization platform that displays clustering results and alignment scores, allowing users to explore model behavior and analyze code properties more effectively.

Project:

- Explainable AI for Source Code Applications: Created a library, pipeline, and metrics for understanding neuron activation, interpreting LLMs, and generative AI applications.

Other Research Projects

- Midwest Labor Dashboard: Developed a multi-page data science dashboard to analyze BLS, Census, and other government labor data, providing an overview of the Midwest labor force for young adults and recent college graduates. Included an OLLAMA chatbot trained on this data to assist with inquiry questions.

Leadership

Military Leadership

United States Air National Guard | Des Moines, IA | Staff Sergeant | August 2021 – August 2023

Overview

Mentored and guided 3-5 airmen in creating intelligence products, reviewing and ensuring their quality, and helping with new airmen onboarding.

Social Work / Victim Advocate

Goodfellow Air Force Base | San Angelo, TX | Head of Teal Rope Program | March 2019 – May 2019

Overview

Led anti-harassment initiatives, coordinated weekly meetings, and recruited program members.

Skills, Certifications, and Honors

Skills

- Programming Languages: C/C++, Python, R, SQL, Rust, Java, C#, JavaScript, HTML5/CSS
- Data Science & Machine Learning: TensorFlow, Scikit-learn, PyTorch, MATLAB, PySpark, Databricks, Tabula
- DevOps & Version Control: Git (GitHub, GitLab, GitKraken), Docker, Kubernetes, Jenkins, Maven, UNIX
- Cloud Platforms: AWS, Google Cloud, Microsoft Azure
- Productivity & Collaboration: Microsoft Office Suite (Excel, Word, PowerPoint), Confluence, Jira, Atlassian tools

Certifications

- Databricks – Scalable Machine Learning, Data Engineering, Deep Learning (Jan 2023)
- AWS – SageMaker (Jan 2023)
- Google Cloud – Cloud Fundamentals (Apr 2020)

Honors

- Dean's List - Iowa State University (May 25, Dec 24)
- Distinguished Graduate – U.S. Air Force Intelligence School (May 2019)
- Airman Leadership School – Air University (Apr 2021)
- Letter of Appreciation – Goodfellow Air Force Base (May 2019)
- Honor Graduate – U.S. Air Force Basic Training (Sep 2018)