Rayan Bouhal

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EDUCATION

Virginia Tech   Blacksburg, VA
Master of Engineering in Computer Science   *Jan. 2024 – Dec 2025*

Virginia Tech   Blacksburg, VA
Bachelor of Science in Computer Science   *Aug. 2021 – Dec 2024*
GPA: ***3.91***

EXPERIENCE

Software Engineering Intern   Summer 2023 and Summer 2024
Honeywell   *Richmond, VA*
- Enhanced queries on edge devices with a fine-tuned, resource-efficient language model using kerasNLP & MLflow.
- Applied CDL standards into the Niagara framework, automating component configuration and boosting usability.
- Engineered solutions for a large Java codebase using Gradle for build automation and Bash for scripting efficiency.
- Collaborated with a team of software engineers and utilized agile methodologies to streamline the development process of the Niagara framework

Machine Learning Research Assistant   Mar. 2024 – May 2024
Sanghani Center for Artificial Intelligence and Data Analytics   *Blacksburg, VA*
- Achieved 91% accuracy in particle size and shape analysis during gas chromatography using OpenCV.
- Identified machine learning techniques to enhance methodologies through a comprehensive literature review.
- Balanced full-time studies with progressive weekly research, collaborating with experts across multiple disciplines.

Cybersecurity Instructor   June 2022 – Aug. 2022
Center for the Enhancement of Engineering Diversity at Virginia Tech   *Blacksburg, VA*
- Nurtured diversity, inclusion, and curiosity among 250 underrepresented engineering students.
- Instructed engineering students on cybersecurity principles, career paths, and real-world applications.
- Facilitated meetings with CIA representatives to gain insights into cybersecurity's role in national intelligence.
- Hosted and created Capture the Flag (CTF) events to enhance problem-solving and communication skills.

PROJECTS

Additive Manufacturing Database | *Spring Boot, React, MySQL, Minio, Docker, Rancher*   Aug 2024 – Dec 2024
- Designed cloud-based platform for additive manufacturing researchers to share and analyze PSPS data efficiently.
- Implemented Spring Boot backend supporting secure data aggregation, retrieval, and 1GB file uploads.
- Optimized storage with Minio and MySQL, ensuring scalable and efficient management of large datasets.
- Deployed the platform with Docker and Rancher for seamless cloud operation and cross-platform access.

FishBook | *Spring Boot, MySQL, Amazon RDS, React, OpenAI API, LangChain*   VT Hacks 12 (Sep. 13–15, 2024)
- Built web app for aquarium enthusiasts with a compatibility checker, equipment tips, and 600+ searchable species.
- Integrated an AI chatbot with OpenAI API and LangChain for instant fish care and compatibility answers.
- Won Best UI/UX at VT Hacks 12 among 178 entries with an intuitive, user-focused, and appealing interface.
- Created a flexible UI optimized for both web and mobile, ensuring accessibility across different devices.

HomographDetector.pro | *Python, Flask, HTML/CSS, MongoDB, Azure, GitHub*   Jan 2024 – May 2024
- Developed and deployed a full-stack Flask web application on Azure, serving over 3000 users.
- Utilized decision tree, ID3, and CART machine learning algorithms to prevent against homograph attacks.
- Integrated Azure with GitHub for streamlined builds and enhanced logging.
- Upgraded application by adding user-requested features: RAG, web-scraping, and exported model to HuggingFace.

TECHNICAL SKILLS

Languages: Java, Python, C, SQL, Bash, JavaScript, HTML/CSS, Lisp
Frameworks: Spring Boot, React/React Native, FastAPI, XGBoost, Flask, JUnit, Google Flutter, Niagara
Developer Tools: Hugging Face, AWS, Microsoft Azure, OpenAI Platform, Kubernetes, Anaconda, Postman, Gradle
Libraries: tensorflow, keras, keras_nlp, numpy, pandas, OpenCV, MLflow, scikit-learn, Stanford NLP