# Rakshita Mathur

***Software Developer | AWS SAA-C03 Certified | Python & ML Specialist***

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## EDUCATION

**University of Ottawa** **Ottawa, Ontario**

*B.Sc. Honors in Computer Science* *Graduated, April 2024*

- **Related Coursework:** Data Structures & Algorithms, **Database Systems**, **Networking**, Operating Systems, **Artificial Intelligence**, **Cybersecurity**.
- **Capstone:** Developed a scalable Graph Neural Network (GNN) model for **community detection** in a 37,000-node social network, achieving 87.82% accuracy through graph-based feature engineering.

## SKILLS

- **Programming**: Python, Java, SQL, Git, Linux
- **Cloud & DevOps:** AWS (EC2, S3, Lambda, IAM, VPC, DNS), Docker
- **Software Engineering:** Agile (Scrum), Unit Testing, Debugging, Modular Design
- **Machine Learning:** PyTorch, TensorFlow, Scikit-learn, OpenCV, DBSCAN, Doc2Vec
- **Other:** Data Mining, NLP, Information Retrieval, Cryptography

## EXPERIENCE

**G2i.inc** **Remote, Ottawa**

*Software Developer AI Data Training* *June 2024 – Ongoing*

- Refined labeling and ranking of 1,000+ prompts, boosting AI model accuracy and performance.
- Designed automated validation workflows, improving data processing efficiency and dataset quality.

**Voice Directed Tally Systems** **Remote, Ottawa**

*Python Developer* *November 2023 – February 2024*

- Integrated OpenCV into a legacy Android ML pipeline for object detection in warehouse automation.
- Delivered 200+ clean, testable code updates and modernized critical components to reduce system errors.
- Wrote scalable Python modules aligned with client requirements, improving detection performance by ~25%.

## PROJECTS

**Cryptographic Algorithm Suite**

- Built custom HMAC-SHA-512 and DSA implementations in Python, showcasing understanding of key management, hashing, and signing.
- Demonstrated nonce reuse vulnerabilities and best practices for cryptographic protocol safety.

**Enterprise Information Retrieval System**

- Designed a document retrieval engine using Python, TF-IDF, Doc2Vec, and NLTK, achieving faster, more accurate search results.
- Developed a custom ranking model with query expansion, improving precision in real-world datasets.

**Anomaly Detection Using DBSCAN**

- Developed a hybrid Java + Python system to detect anomalies in enterprise datasets, improving outlier detection by 20%.
- Implemented modular architecture to enable integration with existing analytics pipelines.

**Decision Tree Classification (Shannon's Algorithm)**

- Implemented a recursive decision tree classifier from scratch using Java, with entropy-based splitting and dynamic attribute selection.
- Applied model to real-world classification tasks and achieved high accuracy in custom datasets.

## CERTIFICATES

- **Solutions Architect Associate Certification (SAA-C03)** *By AWS* *Expires December 2027*
- **Statistic with Python** *By the University of Michigan* *May 2020*
- **IBM AI Engineering** *By IBM* *April 2020*
- **IBM Data Science** *By IBM* *March 2020*