# Md Samshad Rahman (MACS | M.Sc. Stats | B.Sc. CS)

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## Professional summary:

**Solutions Engineer (MACS | M.Sc. Stats)** bridging the gap between Applied AI and scalable cloud architecture. I build production-grade Python backends on AWS Serverless while leveraging extensive consultative sales experience to drive stakeholder alignment. Expert in translating complex technical tradeoffs into business value, ensuring systems are not just technically sound but operationally efficient and cost-effective.

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## Technical Projects & Experiences:

***Dalhousie University,*** Halifax, Nova Scotia

**AI-Powered Mindful Eating App (Persuasive Computing Lab)** [January 2025 – April 2025]

- Engineered a cost-effective inference pipeline by fine-tuning Llama 3.2 (3B) with LoRA adapters and Unsloth. I optimized the model to run within the strict memory limits of T4 GPUs, achieving ~88% response relevance without the cost of deploying a massive commercial model.
- Mitigated the risk of "AI hallucinations" in medical advice by training the model on a curated dataset of 1,500 expert verified tips. I partnered directly with a registered dietitian to validate the training data, ensuring the AI's output was medically safe rather than just statistically probable.
- Architected the end-to-end system linking a React Native mobile interface to a FastAPI microservice. I designed the backend to handle multi-modal inputs (text and photos) in real-time, allowing users to log meals and receive instant personality-based feedback with low latency.
- Implemented psychographic personalization by integrating the Symanto NLP API to detect "Big Five" personality traits from user text. This enabled the system to programmatically modulate its tone and advice strategy for each user, solving the problem of generic, non-specific guidance.

**Serverless Sentiment Analysis for Hotel Customer Feedback** [June 2024 – August 2024]

- Replaced a slow containerized prototype with an event-driven AWS Lambda and DynamoDB Streams architecture, increasing data processing throughput speed by ~30%.
- Automated the manual review of raw feedback by integrating the Google Cloud Natural Language API, achieving ~98% accuracy in sentiment classification to help management instantly pinpoint service issues.
- Eliminated server maintenance and cut infrastructure costs by ~50% by switching to a serverless pay-per-use model, securely exposing the data to staff via AWS API Gateway.

**SecureTask - Serverless Identity Verification System** [June 2024 – August 2024]

- Designed a serverless fan-out architecture (SNS to Lambda) to synchronize task updates across users in real-time, achieving single-digit millisecond latency on DynamoDB.
- Enforced zero-trust security by implementing AWS Rekognition for biometric verification (matching live selfies to IDs with more than 80% accuracy) before issuing secure JWT access tokens.
- Reduced cloud operational costs by ~40% compared to containerized solutions and codified the infrastructure using AWS CloudFormation to deploy the full stack in sub-5 minute.

**Awarded Public Tenders Analysis Dashboard (Visual Analytics)** [September 2024 – December 2024]

- Fixed a broken data process by writing Python scripts to automatically ingest and clean 10 years of raw government tender exports. This pipeline corrected formatting errors and reduced dataset "noise" by ~35%, giving analysts a reliable single source of truth for the first time.
- Replaced the manual review of unstructured contract descriptions with an automated BERTopic (NLP) workflow. This system identifies emerging procurement trends automatically, allowing the team to spot market shifts ~30% faster than reading through the documents manually.
- Built a custom intelligence tool using Dash and Plotly to visualize public spending history. The dashboard cut the team's research time by ~40%, transforming a task that took hours of spreadsheet merging into a simple filtered search.

***Python Developer*** at Smartbytes Ltd. Bangladesh [February 2022 – September 2022]

**Resume Matching with Job Descriptions**

- Solved the inefficiency of manual keyword searching by building a custom matching engine using LinearSVC. Selected LinearSVC over Random Forest after benchmarking showed it handled sparse text features better, boosting match accuracy to 92% (a 40% lift over baseline).
- Engineered a scraping pipeline to harvest 15,000+ resumes and job ads to build a robust training dataset. I integrated spaCy's NER to parse the unstructured text into clean fields (Skills, Education), creating the structured data necessary for high-quality machine learning.
- Deployed the model as an auto-scaling FastAPI microservice on AWS ECS. To help the 6-person frontend team integrate faster, I configured the API to auto-generate Swagger documentation, which drastically reduced the back-and-forth communication required for integration.

***Research Assistant***, Cognitive & Behavioral Data Science Lab, UI University, Bangladesh [October 2021 – March 2022]

**Eating Preference Analysis Based on Human Personality Traits (Data Engineering)**

- Engineered a resilient data ingestion pipeline for Twitter and Foursquare, implementing rotating proxy pools to circumvent strict API rate limits while programmatically enforcing robots.txt compliance.
- Optimized data processing throughput by utilizing Hash Maps and Set structures; this reduced lookup time complexity to O(1), instantly eliminating redundancy in large-scale unstructured datasets.
- Built an NLP preprocessing workflow using spaCy and IBM Watson to extract "Big Five" personality traits, reducing dataset noise by ~45% and improving downstream model accuracy by ~30%.

## Additional Experience:

***Microsoft Senior Advisor***, Best Buy Canada Ltd. Halifax, NS [October 2023 – Present]

- Outperformed store-wide sales efficiency benchmarks by ~35% (revenue-per-hour) by utilizing a consultative approach to translate complex client requirements into tailored IoT and computing architectures.
- Contributed approx. 29% of total departmental revenue through precise technical needs assessment and solution mapping, ensuring hardware compatibility and budget alignment.
- Directed technical onboarding and product training for new associates, standardizing sales methodologies and ensuring team fluency in evolving hardware specifications.

## Education:

- **Master of Applied Computer Science** [September 2023 – May 2025]
  *Dalhousie University, Halifax, NS*
- **Master's in Applied Statistics and Data Science** [November 2019 – April 2022]
  *Jahangirnagar University, Bangladesh*
- **BSc. in Computer Science and Software Engineering** [January 2015 – January 2020]
  *American International University-Bangladesh*

## Core competencies:

**Technical Skills:**

Python, SQL, LLM Fine-Tuning (Llama 3, LoRA), Machine Learning, NLP (spaCy, NLTK, BERTopic), Scikit-learn, Google Cloud NLP, IBM Watson, FastAPI, Django, Flask, REST APIs, PostgreSQL, DynamoDB, MongoDB, SQLAlchemy, AWS (Lambda, EC2, API Gateway, CloudFormation, CloudWatch), Docker, Git, React.js, Tailwind CSS, Web Scraping (Selenium, BeautifulSoup), Tableau, Looker Studio.

**Interpersonal Skills:**

Technical Communication, Client Needs Analysis, Active Listening, Stakeholder Management, Customer Relationship Management (CRM), Mentorship & Training, Strategic Decision Making, Root Cause Analysis, Time Management & Prioritization.