YOUSSEF **IBRAHIM**

(HE/HIM)
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PROFESSIONAL SUMMARY

As a Master of Engineering (MEng) student specializing in Software Engineering and Intelligent Systems at the University of Alberta and a graduate in Computer Science, I am an enthusiastic professional with a robust foundation in various programming languages including Python, Rust, Java, JavaScript, HTML, CSS, and C++. My skills encompass areas such as Artificial Intelligence, Web Development, Machine Learning, Cybersecurity, SEO, and Object-Oriented Programming.

In recent roles, namely an Artificial Intelligence Engineer position at Radical AI, I enhanced AI features using GPT-4 and spearheaded significant projects such as ReX, the AI Career Coach. Additionally, as a Software Engineer at Hootsuite, I engaged in both backend and frontend development, showcasing my proficiency in technologies like Node.js, Firebase, and React, and integrating payment solutions like Stripe for financial transactions.

My educational experience is further enriched by my roles as a peer tutor and undergraduate teaching assistant at the University of Alberta, where I refined my ability to effectively communicate complex concepts. I also participated in biometric information research as an undergraduate research assistant. Moreover, my internship in the supply chain management department at Precision Drilling demonstrated my analytical capabilities and my proficiency with tools such as SAP, AutoCAD, and Power BI.

I am also a proud member of the Golden Key International Honour Society and the Institute of Combinatorics and its Applications, which signify my dedication to academic excellence. I am keen to apply my diverse skill set to a progressive organization and am committed to staying abreast of cutting-edge technological advancements and striving to implement innovative solutions.

SKILLS

- Machine Learning.
- SEO, OOP.
- Front and Back End Development.
- HTML, Rust, CSS, Java, JS, Python, MATLAB, C++.
- Software/Application Development.
- Software Testing.
- Cyber Security.
- Artificial Intelligence.
- Algorithms.
- Supply Chain Management; SAP,AutoCAD, Power Bi, Material Master.
- Web Development.

EXPERIENCE

SEPTEMBER 2023 – SEPTEMBER 2024

ARTIFICIAL INTELLIGENCE ENGINEER, RADICAL AI.

- Enhanced Radical AI's AI features using GPT-4, focusing on NLP, ML, and deep learning techniques.
- Conducted AI R&D for user experience, system optimization, and personalized learning; involved in data analytics for AI precision.
- Kept abreast of AI advancements, providing insights for platform enhancements.
- Developed AI models using ML and deep learning, ensuring data quality for model training.
- Optimized algorithms and models with the AI team, improving system performance and informing strategic decisions.
- Utilized advanced AI technologies like OpenAI, TensorFlow, Botpress, and Inworld.ai.
- Created ReX, the AI Career Coach, and developed adaptive learning and anti-fraud AI systems.
- Contributed to technical meetings with insights for problem-solving and innovation.
- Committed to ongoing learning in evolving AI technologies and methodologies.

JANUARY 2023 – JANUARY 2024

RESEARCH ASSISTANTSHIP, UNIVERSITY OF ALBERTA.

- Contributed to a multidisciplinary team researching biometric information measurement, ensuring all work aligns with the project's main research question.
- Assisted in the collection, organization, and analysis of biometric data, using a variety of data analysis and data visualization tools.
- Participated in research meetings, contributing to the development and refinement of research methodologies, data interpretation, and reporting of results.
- Collaborated with the principal investigator and research team to prepare reports and scientific manuscripts for publication.
- Conducted a comprehensive literature review to stay updated with current trends and advancements in the field of biometrics.
- Assisted in developing and implementing project protocols and standard operating procedures to ensure the integrity and quality of research data.
- Ensured compliance with ethical standards in the collection and handling of sensitive biometric information.
- Presented research findings at academic workshop.

FEBRUARY 2022 – DECEMBER 2023

SOFTWARE ENGINEER, HOOTSUITE, VANCOUVER, BRITISH COLUMBIA.

- Developed and debugged backend applications using Node.js and Firebase, ensuring optimal functionality and user experience.
- Implemented front-end features and optimizations using React, enhancing UI/UX across various software applications.
- Engineered a subscription and payout system utilizing Stripe, ensuring secure and efficient financial transactions.
- Established a robust connection with the AI Manager, facilitating seamless interaction between different software modules.
- Integrated GitHub Code spaces, enhancing collaborative software development and streamlining code deployment workflows.

FEBRUARY 2022 – SEPTEMBER 2023

TEACHING ASSISTANT, UNIVERSITY OF ALBERTA.

- Assisted professors in the delivery of specific Computer Science courses such as Formal Systems and Logic, File and Database Management, Computer Systems and Networks, Operating Systems, Artificial Intelligence, and Web Development.
- Facilitated small group discussions and lab work, ensuring students comprehend the course material and can practically apply theoretical concepts.
- Hold regular office hours to provide one-on-one guidance and problem-solving assistance to students, using personalized approaches based on the student's individual strengths and objectives.
- Aided in the preparation and grading of assignments, projects, and examinations, providing timely and constructive feedback to students.
- Developed a thorough understanding of course materials and maintain familiarity with current trends and advancements in the field of Computer Science to ensure relevant and updated instruction.
- Assisted professors in refining course curriculum based on student performance and feedback, ensuring that course objectives are met and material remains engaging.
- Coordinated with other teaching assistants and tutors to ensure consistent delivery of course material and shared best practices for student instruction.
- Assisted in the preparation and delivery of lecture materials and demonstrations as needed.

JANUARY 2022 – DECEMBER 2022

COMPUTING SCIENCE INTERN, PRECISION DRILLING, CALGARY, ALBERTA.

- Assisted in the development and deployment of web-based applications as part of the Company-Wide Web Development Project.
- Collaborated with Software Engineers and IT Managers to design, code, and implement new features for the company's web applications, using languages such as JavaScript, HTML/CSS, and Python or Java.
- Conducted extensive testing to identify bugs and areas of improvement in the web applications, ensuring compatibility across different browsers and devices.
- Research, organize, and analyze data to communicate Software Development Life Cycle (SDLC) improvements across the organization, particularly regarding web development practices.
- Worked closely with the IT Business Analyst for data analysis, system architecture design, and reporting as needed using a variety of tools and technologies, including SQL and Power BI.
- Supported the roll-out of new web applications or features to different departments within the company, assisting in user training and adoption.
- Assisted in managing the lifecycle of web applications, including updates, patches, and version control, ensuring adherence to the company's software development standards.
- Reviewed user feedback, software bug reports, and system logs to enhance the performance and user experience of existing web applications.
- Participated in the development and refinement of APIs to facilitate the integration of web applications with other systems within the organization.
- Contributed to continuous improvement initiatives within the IT department, ensuring that the web-based systems developed meet the current and future needs of the business.

APRIL 2021 – DECEMBER 2021

SUPPLY CHAIN MANAGEMENT INTERN, PRECISION DRILLING, CALGARY, ALBERTA.

- Supported the development of Material Masters and other master data as a part of the Inventory and Procurement Optimization Project (IPOP).
- Supported with material creations within the Material Master and to research, organize data, analyze data, communicate Material Master Request process improvements across the organization.
- Worked with Purchasers, Equipment Managers, and Administrators to process requests for new material masters, identify gaps in data quality, and assist users in creating pick lists for maintenance and repairs.
- Worked with SCM Business Analyst and Asset Integrity Coordinator for data analysis and reporting as needed using a variety of software including SAP & Power Bi.
- Helped implement agreed vendor pricing and support roll out to field procurement.
- Supported vendor management activities and early phases of category management.
- Reviewed Material Masters and perform checks to ensure they align with Master Data Standards.
- Reviewed other data sources (such as an interactive parts catalogue, and other OEM parts lists) to enrich existing data.
- Assisted with continuous improvement initiatives for Supply Chain to ensure that the internal processes within the organization meet the needs of the business.

JANUARY 2021 – PRESENT

PEER TUTOR, UNIVERSITY OF ALBERTA

- Taught learning modules and based lesson plans on the individual student's strengths and objectives.
- Assisted students in understanding complex Computer Science, and Mathematical concepts through interactive and engaging teaching methods.
- Collaborated with professors and academic advisors to align tutoring with course curriculum and ensure that students receive the support they need.
- Developed and maintain a thorough understanding of the course material in Computer Science and Mathematics to effectively guide students.
- Provided constructive feedback and guidance to help students improve their study habits and academic performance.
- Stayed up to date with the latest developments and trends in the field of Engineering,
- Computer Science, and Mathematics to incorporate relevant and current information in tutoring sessions.

EDUCATION

SEPTEMBER 2024 – DECEMBER 2025

MASTER OF ENGINEERING (MENG) IN ELECTRICAL AND COMPUTER ENGINEERING – SOFTWARE ENGINEERING AND INTELLIGENT SYSTEMS, UNIVERSITY OF ALBERTA

Current and planned courses include:

- Software Construction and Verification (ECE 522): Principles and techniques for constructing reliable software systems, emphasizing formal verification methods.
- Information Theory and Channel Coding (ECE 582): Fundamental concepts in information theory, including channel capacity, data compression, and error-correcting codes.
- Quality Engineering and Management (ENG M 512): Examines quality management principles, quality assurance practices, and engineering tools for process optimization.
- Robot Learning (CMPUT 631): Focuses on robot learning, Reinforcement learning, CL, and EAI.
- Deep Learning in Computer Vision (ECE 740): Advanced topics in deep learning and its applications in computer vision.
- Machine Learning System Engineering (ECE 720): Focuses on AI system Engineering, Software Engineering and Testing, ML and AI systems, AI software testing and analysis, Trustworthiness of AI systems.
- Blockchain Technologies (ECE 720): Focuses on technical foundations of cryptocurrency, blockchain technology, and distributed consensus.

SEPTENBER 2019 – APRIL 2024

BACHELOR OF SCIENCE (BSC) – COMPUTING SCIENCE, UNIVERSITY OF ALBERTA.

- 3.85 GPA.
- Mathematics minor.

SEPTEMBER 2017 – JUNE 2019

INTERNATIONAL ADVANCED LEVELS (GCE A-LEVELS), THE BRITISH SCHOOL OF KUWAIT

- Graduated with distinction, top 5% in the region.
- British A-level grades of A*A*A in Mathematics, Physics and Further Mathematics Respectively.
- Achieved 800/800 in the Mathematics SAT.

HONOURS & AWARDS

SEPTEMBER 2023

GOLDEN KEY INTERNATIONAL HONOUR SOCIETY MEMBER, UNIVERSITY OF ALBERTA.

Proud member of the Golden Key International Honour Society, representing the top 15% of college and university sophomores, juniors, seniors, and exceptional graduate students worldwide, recognized solely for academic excellence. Golden Key, the world's largest collegiate honor society, is built on pillars of excellence, integrity, and service. This esteemed society offers a platform for personal and professional growth, fostering lifelong learning and a commitment to making a positive global impact. Golden Key members form a global community of high-achieving individuals dedicated to education and service. Membership into the Society is by invitation only. I'm excited to connect with fellow Golden Key members and explore avenues for collaboration, mentorship, and shared success.

JANUARY 2022

MEMBER (MTICA), THE INSTITUTE OF COMBINATORICS AND ITS APPLICATIONS.

- An International Scholarly Society
- I have attended/presented:
  - In 2023, Canadam, Winnipeg (Canada), June 2023.
  - In 2022, Stinson66, Toronto (CA).

MONTH YEAR

MEMBER (ICA), THE INTERNATIONAL COMMUNICATION ASSOCIATION (ICA)

A member in the Human-Machine Communication group that supports and promotes scholarship regarding communication between people and technologies designed to enact the role of communicator (i.e., artificial intelligence, robots, digital assistants, smart and IOT devices). HMC encompasses research within Human-Computer Interaction, Human-Robot Interaction, and Human-Agent Interaction and related areas of study focused on how people make sense of machines as communicators; the implications of people's interactions with communicative technology for individuals, organizations, and society; and the philosophical and critical critique of the design of these technologies and their integration into daily life.

PROJECTS

ROBUSTNESS TESTING: ADVERSARIAL ATTACKS ON LARGE LANGUAGE MODELS

- Contributed to a research project evaluating the robustness of large language models (LLMs) such as Mistral-7B under adversarial attack scenarios.
- Implemented and tested character-level and word-level adversarial attacks (e.g., typographic perturbations, checklist-based attacks) on benchmark datasets such as AG News, SST-2, and MRPC to measure degradation in model performance.
- Automated the generation of perturbed datasets and designed reproducible scripts for evaluation and comparison.
- Proposed initial defense strategies and robustness metrics inspired by current state-of-the-art methods in adversarial NLP and model reliability.
- Integrated Hugging Face models locally and securely managed access tokens for seamless deployment and testing.

MALICIOUS URL DETECTION USING MACHINE LEARNING

- Developed a machine learning model to identify malicious URLs, improving web security by detecting phishing and other online threats.
- Utilized Python, scikit-learn, and Natural Language Processing (NLP) techniques to preprocess URL data, extract features, and build classification models.
- Achieved high detection accuracy through iterative tuning of hyperparameters and evaluated the system using confusion matrix-based metrics like precision, recall, and F1-score.

SELF-BALANCING BINARY TREES

- Designed and implemented Red-Black Trees and AVL Trees in Rust, focusing on improving operational efficiency for search, insert, and delete operations in sorted data.
- Incorporated unit testing and modular design for high maintainability and ensured the robustness of the implementation through comprehensive test coverage.
- Explored optimization techniques to further reduce time complexity in high-performance computing applications.

AID DELIVERY APP

- Developed a delivery application tailored for humanitarian aid organizations to optimize real-time tracking and logistics management.
- Utilized React and Flutter for a cross-platform user interface, integrated Firebase for backend data storage, and incorporated the Google Maps API for real-time route tracking.
- Implemented features for scheduling, status updates, and secure data sharing to ensure efficient delivery coordination in high-pressure environments.
- Focused on creating a user-friendly design to simplify logistics for non-technical users in humanitarian sectors.

STOCK MARKET MONITOR

- Built a robust financial analysis tool in Rust that monitors stock prices, performs technical and trend analysis, and visualizes real-time and historical data.
- Designed the tool to process large datasets efficiently, leveraging Rust's performance benefits and safety guarantees.
- Integrated data visualization libraries to provide clear, interactive charts for better decision-making by investors and analysts.

QR CHECK-IN APP

- Engineered a QR-based check-in system for event management, allowing seamless user registration, tracking, and analytics.
- Built using Java, React, Node.js, and Firebase, enabling real-time updates and a centralized database for attendee data.
- Implemented secure authentication and encryption protocols to ensure data privacy, with a scalable architecture to handle large user bases.

PERSONAL PORTFOLIO WEBSITE

- Designed and deployed a dynamic personal portfolio website to showcase projects, skills, and experiences, with an emphasis on responsive design.
- Leveraged HTML, CSS, and JavaScript to create an interactive user interface and integrated third-party APIs for advanced features such as real-time data and contact forms.
- Implemented search engine optimization (SEO) techniques to enhance visibility and reach, while maintaining high performance and accessibility standards.

OPERATING SYSTEM PROJECT

- Designed and implemented an operating system simulator in Python, focusing on process scheduling and memory management modules.
- Developed algorithms for task prioritization (e.g., Round Robin, First Come First Serve) and simulated virtual memory allocation strategies to optimize resource utilization.
- Enhanced system performance through debugging and iterative testing, enabling the simulator to serve as an educational tool for understanding core OS principles.