AHMED IBRAHIM

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MACHINE LEARNING ENGINEER

Results-driven Machine Learning Engineer with over 7 years of expertise in machine and deep learning, specializing in communication and biomedical engineering data. Published 15 journal and conference papers, advancing AI-driven solutions. Proficient in Python, TensorFlow, PyTorch, and Matlab for statistical analysis, predictive modeling, and deep learning. Skilled in building end-to-end ML pipelines—from problem definition to deployment and maintenance—for scalable production environments. Experienced in AWS cloud for efficient AI model deployment. Dedicated to solving complex real-world challenges with cutting-edge AI techniques.

• Machine Learning & Deep Learning • Model Performance & Optimization • Hyperparameter Tuning • Problem Solving • Feature Engineering • Data Analysis & Visualization • Statistical Analysis • Signal & Image Processing

Languages: Python
Web: HTML5, CSS3
Web Services: RESTful APIs
Frameworks: Tensorflow, Keras, Pytorch, Scikit-learn
Databases: MySQL, MongoDB
Tools: PyCharm, Jupyter Notebook, Spider, Visual Studio Code, Matlab, Pandas, Numpy, Matplotlib, GitHub
Platforms: Windows, Linux, AWS
Big Data: Spark

PROFESSIONAL EXPERIENCE

CAREER NOTE: *Completed on-campus studies and currently taking distance education courses to complete a* ***Master's Degree in Computer Science*** *(Available for full-time, W-2 employment).*

RFTONICS RESEARCH CENTER, KING SAUD UNIVERSITY, Riyadh, Saudi Arabia • 02/2013 – 06/2024
A research center that carries out cutting-edge research in the domain of electrical and biomedical engineering.

Machine Learning Engineer (10/2016 – 06/2024)
Designed and developed machine learning algorithms.

- Built and optimized ML algorithms for engineering applications using Python, TensorFlow, Keras, and Scikit-learn, reducing model training time by 50% for signal and image classification through GPU programming.
- Conducted comparative analysis of traditional machine learning and deep learning approaches for signal and image processing, identifying optimal models that improved classification performance.
- Processed and analyzed laboratory datasets using Python, Pandas, and NumPy, implementing efficient data preprocessing techniques that reduced processing time while improving data quality and integrity.
- Built custom data augmentation pipelines using different algorithms to enhance model generalization in image and signal classification, increasing dataset diversity.
- Led the development, coordination, and management of multiple machine learning research projects and grant proposals, supporting advancements in AI-driven applications.
- Configured and deployed a multi-user machine learning servers with GPU acceleration using Windows, TensorFlow, PyTorch, and Nvidia CUDA, optimizing resource allocation and reducing model training time by 50%.
- Mentored 10 undergraduates on ML-based projects, offering hands-on guidance in Python, Scikit-learn, and MATLAB, and advancing their skills in AI, data science, and computational modeling.
- Maintained the RFTONICS website using Drupal CMS and HTML/CSS, ensuring optimal performance and content updates to enhance the research group's digital presence.
- Published 15 research papers in reputable journals and conferences, including IEEE and Applied Optics, accumulating over 134 citations, advancing the field of communications engineering.

Research Assistant (02/2013 – 09/2016)

- Designed and maintained the RFTONICS website using Drupal CMS, improving site readability and performance by 40% and increasing visitor engagement.
- Managed and maintained RFTONICS' windows-based servers and computer systems, achieving 99.9% system uptime and reducing downtime incidents, and supporting research team collaboration.
- Conducted queries on scientific databases, including Web of Science, using advanced search strategies, retrieving relevant publications for research projects.

- Generated statistical reports to support scientific research activities using Python, Excel, reducing data analysis time and improving report accuracy.
- Participated in preparing tenders for equipment procurement for the center using ERP systems, contributing to a 20% cost reduction through competitive bidding and vendor analysis.
- Partnered with researchers in radar, optics, sensors, physics, and ML to achieve technical goals, completing 4 interdisciplinary research projects.

Technologies Used: *Tensorflow, Keras, Scikit-Learn, PyTorch, Numpy, Matplotlib, OpenCV, Matlab, Endnote, Latex.*

VISITING PROFESSOR PROGRAM (VPP), KING SAUD UNIVERSITY, Riyadh, Saudi Arabia • 03/2010 – 01/2013
Department of visiting professor in academic university.

Web Developer
Developed and implemented websites.

- Developed and maintained the VPP website using SharePoint and HTML/CSS, enhancing functionality, security, and user experience, which increased page load speed by 40%.
- Implemented intranet websites to support internal program operations and communication using SharePoint, C#, and ASP.Net, improving team collaboration.
- Managed documentation processes for visiting professors, maintaining 100% accuracy in records and organizing a database of over 150 profiles.
- Streamlined administrative workflows by organizing visiting professor records using Excel and automated scripts, improving data accessibility and reducing retrieval time by 50%.
- Assisted in enhancing digital resources and web content to support program initiatives all over the university departments.

Technologies Used: *C#, .NET 2, Webforms, SharePoint, HTML, CSS.*

ACADEMIC PROJECTS

Maharishi International University (2025)
Authwave: A serverless authentication system for user registration, login, and profile management with image uploads, built on AWS for scalability. It uses AWS Lambda, API Gateway, DynamoDB, S3, and CloudFront, with a fully functional CI/CD pipeline. Led all AWS tasks, including implementing a CloudFormation template to create necessary resources for the frontend and backend, and establishing the CI/CD pipeline. Technologies used: TypeScript, Node.js, React, and AWS.

PDFChat: Developed the frontend for a Web-Based Retrieval-Augmented Generation (RAG) application for private PDF interaction. Built with Angular and Tailwind CSS, ensuring a seamless, responsive UI. Collaborated on backend integration using LLAMA, Node.js, Express, MongoDB, and ChromaDB for efficient document retrieval.

StudentsPolicies: Independently developed a full-stack web application for managing and displaying student policies with authentication, policy submission, voting, and academic year-based browsing. Built with React, TypeScript, Tailwind CSS, Express, and MySQL for secure and efficient functionality.

PERSONAL PROJECTS

Security Investigation of sustainable Free Space Optical (FSO)-based IoT Communications in Smart Cities using Machine Learning 2022-2023: Researched security in sustainable Free Space Optical (FSO)-based IoT communications for smart cities, developing ML algorithms for threat detection and mitigation. Published three papers featuring neural networks, SVMs, CNNs, and autoencoders. Utilized Python, Keras, Matplotlib, and MATLAB.

EDUCATION

Master of Science in Computer Science
(In progress via distance education; expected completion 04/2027)
Maharishi International University, Fairfield, Iowa

Key Courses: Algorithms, Web Application Programming, Cloud Computing, Modern Web Applications

Master of Science in Optics, Image, Vision & Multimedia
University Paris-Est Créteil (UPEC), Paris, Paris, France (09/2016)
Key Courses: Biometrics, Computer Vision, Image Processing, Signal Processing, Smart Systems, Virtual and Augmented Reality

Bachelor of Science in Computer Science
Assiut University, Assiut, Egypt (07/2007)