Ahmed ElHoffy

Master of Science in Electrical & Computer Engineering || California State University – Long Beach

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SUMMARY

- I am a Software Engineer with over 2 years of experience in predictive maintenance, anomaly detection, and process optimization in the semiconductor industry.
- I have worked on end-to-end ML workflows—from data preprocessing to model training, deployment, and monitoring—using tools like TensorFlow, Scikit-learn, and PyTorch.
- I've built automated data pipelines with Python and SQL to support real-time analytics, enabling faster decision-making and improving equipment performance and yield.
- I also have hands-on experience in electrical interconnect design, wire harness assembly, and PCB optimization, ensuring compliance with industry standards.
- As an educator, I've taught courses in data analytics, programming, and cybersecurity, consistently receiving strong feedback for my engaging and effective teaching style.

EDUCATION

California State University – Long Beach | College of Engineering

- M.S. Electrical and Computer Engineering | **CGPA: 3.88 / 4.00** ***Aug 2020 – May 2023***
- B.S. Electrical and Computer Engineering | **CGPA: 3.85 / 4.00** ***Aug 2017 – Jan 2020***

PROFESSIONAL EXPERIENCE

CS Faculty Instructor

Portland Community College - *Portland, OR* ***Aug 2023 – Present***

- Designed and taught data analytics and cybersecurity courses, emphasizing hands-on applications in Python, SQL, and Tableau.
- Incorporated machine learning concepts into curriculum development, focusing on real-world cybersecurity applications.

Software/Systems Engineer

LAM Research - *Tualatin, OR* ***Nov 2022 – Nov 2024***

- Developed and deployed deep learning models using OpenCV, TensorFlow, and Scikit-learn, implementing CNNs and anomaly detection to predict and classify defective wafers, improving yield rates by 35%.
- Engineered AI-driven automation for wafer recombination, achieving 90% accuracy using synthetic data and CNNs, cutting processing time from 1 hour to 5 minutes and saving 1,000+ engineering hours annually.
- Built automation models in Python/SQL tools for process analysis (throughput, machine health, HF current), reducing analysis time by 90% and improving precision from seconds to milliseconds.
- Developed predictive maintenance models using XGBoost, linear regression, and t-tests, enabling 85% accurate failure detection, reducing unexpected equipment failures, and increasing chamber uptime by 40%.
- Designed and deployed real-time analytics dashboards in Tableau, providing insights into ML model performance, chamber efficiency, and system reliability, supporting operational improvements.
- Developed automated data pipelines using Pandas and SQL, aggregating chamber performance metrics to facilitate early fault detection and provide actionable insights to process engineers.
- Used CAD "Siemens NX" and Creo to model, review, and update electrical assemblies and mechanical layouts used in semiconductor equipment.
- Designed, built, and analyzed electrical schematics, wire harnesses, and cable assemblies, including hands-on cable build-up and testing; ensured compliance with electrical standards and integration into semiconductor systems.

Graduate Research Assistant

CSULB-Department of Electrical Engineering - *Long Beach, CA* ***Nov. 2020 – Oct 2022***

- Designed and implemented Python and C++ software solutions for large-scale data collection and image processing, transforming raw data into structured ML models.
- Developed Python-based deep learning models for image processing and UAV wildfire surveillance, achieving an 85% detection accuracy.
- Published findings in IEEE Conference proceedings, contributing to advancements in federated learning research.
- Optimized data pipelines and model training using SQL/NoSQL databases, reducing data processing time by 40%.

Software Engineer

DataScience Middle East (SAS Golden Partner) - *Dubai, UAE* ***June 2019 – Nov 2020***

- Developed SAS enterprise solutions, focusing on data analytics and machine learning for diverse clients.
- Streamlined backend processes with optimized SQL queries, enhancing data processing efficiency by 35%.
- Delivered actionable insights through text mining and visual analytics tools, increasing client satisfaction rates.
- Managed large data sets and conducted text mining using Oracle and SQL, delivering actionable insights and business intelligence to clients.

TECHNICAL SKILLS

- ***Programming Languages***: Python, C++, SQL, MATLAB, HTML/CSS, Bash
- ***Frameworks & Libraries:*** TensorFlow, PyTorch, Keras, OpenCV, Pandas, Scikit-learn
- ***Platforms & Tools:*** Tableau, Anaconda, MATLAB Simulink, Zuken E3, iPLM, NX, Creo
- ***Machine & Deep Learning Models:*** CNNs, RNNs, DNNs, YOLO
- ***Techniques:*** Image Processing, NLP, Decision Trees, KNN, SVM, Random Forest, K-Means
- English & Arabic – professional proficiency

PROJECTS

- FL UAV-net: Development of FL - CNN/YOLO Algorithms through Deep Language Modeling & Image / Video Processing for Wildfire Detection by Using UAVs ***Aug 2021 – Oc. 2022***
- R2R4-CTGT OFDM: Applying Fast Fourier Transform (FFT) Algorithms in the Orthogonal Frequency Division Multiplexing (OFDM) System, Review and Analysis. ***Jan. 2019 – June 2019***
- Smart ROBO: An Integrated Robotic Arm for Objects' Routing & Monitoring ***Aug 2018 – Dec 2018***
- Huffman Code: Applying this prefix code as an algorithm for Data Compression ***Oct 2018 – Dec 2018***
- Tic-Tac-Toe Game: Implementing a two-player game on a 3x3 Board game. ***Oct 2018 – Dec 2018***

AWARDS

- President's Honor List: - Spring 2016, Fall 2016, Spring 2018, Fall 2018, Spring 2019

- Dean's Honor List *(2016, 2018, 2020-2021, 2023)*

- 3rd Place Award for Senior Design Competition: - CSULB Electrical Engineering Department May 2019

- **Judges were from Boeing, Aerospace Corporation, and Southern California Edison.**

CERTIFICATIONS ***Link***

- **Machine Learning Specialization**
  DeepLearning.AI ***Link***
- **Deep Learning Specialization**
  DeepLearning.AI

PUBLICATIONS

- A. I. ElHoffy, S. Kwon, and H.-G. Yeh, "*Federated/Deep Learning in UAV Networks for Wildfire Surveillance*," in Proceedings of the 2023 IEEE Conference, Wireless Telecommunications Symposium (WTS) Boston, MA, USA, April. 2023 IEEE Xplore

References are available upon request.