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SUMMARY

I am a Data Scientist with strong expertise in Python, SQL, and MLOps, focused on building and deploying robust machine learning and deep learning models. I leverage data-driven approaches to solve challenging problems and contribute to strategic growth.

EDUCATION

Zagazig University – BSc in Computer Science (Faculty of Computers and Information)

Graduated: July 2025 | Overall Grade: Very Good | Graduation Project: Excellent

EXPERIENCE

Data Scientist & Analyst at Petco Sep 2024 – Present | Saudi Arabia

- Develop ML models for business optimization and customer experience enhancement, delivering actionable insights through comprehensive data analysis.

Data Science Core Member at GDG Zagazig Sep 2024 – Present | Zagazig

- Create analytical dashboards, boost engagement by 25% and lead workshops to foster community growth in data science.

Data Science Team Lead at Byte Beam Sep 2024 – Jul 2025 | Zagazig

- Lead end-to-end development of ML models for skin disease classification, improving diagnostic accuracy and integrating specialist connection features.

Data Analytics Trainee at DEBI Nov 2024 – May 2025 | Cairo

- Execute sales and supply chain analysis using Power BI and Tableau, gaining hands-on experience with Azure cloud services and data governance.

PROJECTS

Classify Ocular Diseases 🔗 | TensorFlow, Keras, OpenCV

- Designed and trained a Convolutional Neural Network (CNN) to classify ocular diseases including glaucoma, diabetic retinopathy, cataracts, and ARMD.
- Applied image preprocessing techniques such as resizing, normalization, and data augmentation to improve model robustness.
- Achieved ~80% accuracy on unseen data, with visual validation using prediction-label comparisons for reliability assessment.

Traffic Sign Detection 🔗 | Python, Deep Learning, Computer Vision, CNNs

- Engineered real-time computer vision model for robust traffic sign detection, a critical component for autonomous navigation systems.
- Leveraged advanced deep learning architectures and extensive, diverse image datasets to achieve superior accuracy across varied environmental conditions.
- Optimized model performance to ensure high-fidelity detection, directly contributing to enhanced safety and reliability in autonomous vehicle operations.

Potato Leaf Disease Prediction 🔗 | Python, Deep Learning, Image Processing

- Developed a machine learning model for early and accurate prediction of potato leaf diseases from image data, enabling timely agricultural intervention.
- Applied advanced image processing techniques, including segmentation and feature extraction, coupled with robust classification algorithms to precisely identify disease patterns.
- This contributed to enhanced crop yield and reduced agricultural losses by providing a data-driven solution for proactive disease management.

Credit Card Fraud Detection 🔗 | Python, Machine Learning, Data Preprocessing, Classification

- **Developed and deployed a high-accuracy fraud detection model** using advanced classification algorithms (e.g., XGBoost, Random Forest), achieving **98% accuracy** in identifying fraudulent transaction patterns and significantly reducing financial risk.
- **Executed comprehensive data preprocessing and feature engineering**, including handling missing values, normalization, and creating new predictive features to enhance data quality and boost the model's predictive power.
- **Addressed severe class imbalance** through advanced techniques like SMOTE or class weighting, which was critical for improving recall and precision, ensuring the model could effectively detect rare fraudulent cases.

Asteroid Diameter Prediction 🔗 | Python, Machine Learning, Regression, Data Analysis

- **Engineered a high-precision regression model** that predicted asteroid diameters with **94% accuracy** by leveraging advanced machine learning techniques, including ensemble methods and hyperparameter tuning.
- **Leveraged and preprocessed complex NASA datasets** (e.g., NEOWISE, JPL SBDB), performing rigorous feature selection and engineering to identify key predictors for model training.
- **Conducted a comprehensive comparative analysis** of multiple algorithms (e.g., Gradient Boosting, Random Forest, SVM) to rigorously evaluate performance and select the optimal model for deployment.

Neo-Hazard Prediction 🔗 | Python, Machine Learning, Data Analytics

- **Designed and deployed an end-to-end machine learning system** that classifies Near-Earth Objects (NEOs) as potentially hazardous, integrating multiple models like Random Forest and XGBoost to achieve **89% prediction accuracy**.
- **Engineered a robust data preprocessing pipeline** that handled critical challenges including outlier capping, feature creation (e.g., diameter mean), and addressing class imbalance with SMOTE, significantly enhancing model reliability and performance.
- **Developed and launched an interactive Streamlit web application** to operationalize the model, enabling both single and batch predictions with a user-friendly interface for real-world data exploration and hazard analysis.

BurnNet 🔗 | Developed a 98% accurate burn classification system using EfficientNetB3, SMOTE, and Streamlit for end-to-end deployment.

- **Engineered a high-accuracy burn degree classification system** using Transfer Learning with EfficientNetB3, achieving **92% test accuracy** and well-balanced precision/recall scores across all three classes through rigorous hyperparameter tuning and cross-validation.
- **Built a robust data preprocessing pipeline** that effectively addressed critical dataset challenges, including severe class imbalance using SMOTE and extensive on-the-fly image augmentation, significantly enhancing model generalization and performance on unseen data.
- **Developed a full end-to-end machine learning solution,** from data collection and model training to deployment, by integrating the trained model into an interactive Streamlit web application capable of providing real-time single and batch predictions for practical use.

Technical Expertise

- **Programming & ML:** Proficient in Python, SQL, TensorFlow, and PyTorch for end-to-end machine learning, computer vision, and data analysis.
- **Tools & Visualization:** Skilled in Power BI, Tableau, and Looker Studio for creating insightful dashboards, with experience in cloud deployment using Docker and Flask.
- **Data Management:** Experienced in data preprocessing, model development, hyperparameter tuning, and evaluation using Scikit-learn, OpenCV, XGBoost, and neural networks (CNNs, RNNs, YOLO).
- **Soft Skills:** Strong problem-solving, teamwork, communication, and time management abilities, with a focus on innovation and continuous learning.