Reda EL HAIL

Machine learning engineer

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Education

- **Ph.D. in Machine Learning**
  Arenberg Doctoral School, KU Leuven, Belgium
  Thesis: Deep learning model's robustness improvement in various contexts.
  2021 – Present
- **Master's in Mathematics and Image Processing**
  ISTIC, Rennes 1 University, France
  2016 – 2019
- **Engineering Diploma in Electrical Engineering**
  Mohammadia Engineering School, Rabat, Morocco
  2012 – 2016

Professional Experience

- **Machine Learning Engineer**
  KU Leuven, Geel Campus (DTAI-FET)
  2021 – Present
  - Led end-to-end development of machine learning models achieving state-of-the-art performance in activity classification and detection in unseen conditions.
  - Designed and executed data collection campaigns.
  - Developed advanced deep learning architectures, leveraging TensorFlow for model training, optimization, and deployment.
  - Implemented semi-supervised learning techniques for unsupervised domain adaptation, improving model generalization across diverse environments.
  - Developed a real-time data pipeline using Kafka, Spark, and Airflow to ingest, process, and orchestrate streaming data efficiently.
  - Built CI/CD pipelines using Docker and GitHub hooks for seamless deployment of machine learning models on edge devices. %item Collaborated with industry partners to align research objectives with real-world applications, ensuring practical relevance and scalability.
  - Managed codebase and experiments using Git and MIFlow, ensuring reproducibility and efficient tracking of model performance metrics.
- **Machine Learning Engineer (Time Series Analysis)**
  InterDigital R&D, Cesson Sevigne, France
  2019 – 2020
  - Developed machine learning models for human activity recognition using range profile maps, achieving high accuracy in classification tasks.
  - Extracted and engineered features from time-series data, employing traditional ML methods (SVM, LDA, KNN) and deep learning approaches (CNN, RNN, Autoencoders).
  - Deployed real-time activity recognition systems on Raspberry Pi, demonstrating the feasibility of low-power, edge-based AI solutions.

– Utilized Python, TensorFlow, and scikit-learn for model development, achieving significant improvements in classification accuracy and computational efficiency.

Technical Skills

- **Programming Languages**: Python, MATLAB, C/C++
- **Machine Learning Frameworks**: TensorFlow, Keras, Scikit-learn, PyTorch
- **Big data:** Apache Spark, Kafka, Airflow, SQL
- **Cloud**: Docker, Databricks, Mlflow, GitHub Workflows, Google Cloud Platform (Vertex AI)
- **Data Processing & Visualization**: Pandas, NumPy, Matplotlib, Seaborn, Plotly, OpenCV

Publications

- **Radar Based Human Activity Recognition: a Study on Cross-Environment Robustness**
  MDPI Journal of Electronics [https://doi.org/10.3390/electronics14050875]
  - Discovering new deep learning techniques to improve model robustness to unseen situations during training.
- **Radar-Based Human Activity Recognition: From Classification to Detection**
  Presented at BNAIC/BeNeLearn 2024
  - Introduced novel deep learning techniques for HAR using radar data, achieving significant improvements in detection accuracy and robustness.

Certifications

- Machine Learning Engineering for Production (MLOps) Certificate
- Data Lifecycle in Production Environment Certificate
- Machine Learning Modeling Pipelines in Production Certificate

Languages

- **Arabic**: Native
- **English**: Fluent
- **French**: Fluent