Farid **Abdalla**

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Work Experience

Data Scientist – Research Assistant

HE-Arc – University of Applied Sciences

09/2020 – Present   Neuchâtel, Switzerland

- Designed, built, and deployed machine learning models on **6+ projects** with technologies such as **Scikit-learn**, **PyTorch**, and **TensorFlow** resulting in successful AI solutions across various industries including financial, social, industrial, and space.

- Analyze, preprocess, clean and manage various data types, such as **time series**, **images**, **videos**, and **natural language** to create effective data-driven solutions and ensure optimal usage by the models.

- Collaborate closely with clients and stakeholders to determine project needs, create customized solutions, and provide continuous support and optimization, leading to **increased customer satisfaction**, **positive project results**, and **recurring client partnerships**.

Education

Master's Thesis

Osaka Metropolitan University

04/2022 – 09/2022   Osaka, Japan
Grade: **6.0/6.0**

M.Sc. in Data Science

HES-SO Master – University of Applied Sciences

09/2019 – 08/2020   Lausanne, Switzerland
GPA: **5.5/6.0**

B.Sc. in Computer Science – Software Development

HE-Arc – University of Applied Sciences

09/2016 – 08/2019   Neuchâtel, Switzerland
GPA: **5.6/6.0** (award for best GPA)

Certificates

Deep Reinforcement Learning Course

HuggingFace   *March 2023*
Grade: **Excellent**

Winter School in Data Analytics and Machine Learning

University of Fribourg   *Spring 2021*
GPA: **5.6/6.0**

Data Scientist

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General Skills

Machine Learning   Deep Learning
Reinforcement Learning   Data Analysis
Data Visualization   Computer Vision
NLP   Software Engineering

Technical skills

Machine Learning:
Scikit-Learn, Spark, Hadoop, Pandas, NumPy, SQL, Spacy, Matplotlib, Seaborn, Plotly

Deep Learning:
PyTorch, TensorFlow, Keras, Ray RLlib

Software Engineering:
Git, Docker, UNIX, CI/CD, Cloud Computing, Data Structure, Algorithms, Design Patterns, Testing, Prototyping

Programming:
Python, C++ (CUDA, Qt), Java (JEE, Android), C#, Web (JavaScript, Django, Flask)

Languages

French   Native

English   Cambridge First Level C1

Japanese   JLPT N2 (B2-C1)

German   A2

Interests

Escape Games   Anime & Manga

Artificial Intelligence   Fitness

Projects

PPI Doppelganger
`Python` `TensorFlow` `Keras` `Javascript` `Spacy` `SHAP` `LIME`

- Built a deep learning model for predicting currency pair trends, focusing on explainability and transparency which enhanced trading strategy effectiveness and decision-making confidence.
- Improved the application by incorporating Natural Language Processing for the analysis of various documents, extracting pertinent information through text classification, document summarization, and sentiment analysis.
- Deployed the model on a web application, providing traders with valuable insights into model predictions and facilitating informed decision-making.

Ceramaret K-Défauts
`Python` `Scikit-Learn` `Spacy`

- Developed an efficient classification model that leverages textual descriptions to categorize ceramic defects, achieving an 85% accuracy rate, improving quality control and manufacturing processes.
- Initiated the project with unsupervised classification methods and subsequently transitioned to supervised classification techniques for improved results.
- Delivered the final model to Ceramaret for internal application, further optimizing their operational efficiency.

SOON-RL
`C#` `Unity ML-Agents` / `Python` `Stable Baselines` `Ray RLlib` `Ray Tune` `SimPy`

- Developed a Reinforcement Learning model aimed at optimizing workshop production and managing machine failures, leading to a research paper published at the PIMRC 2021 conference.
- Initiated as a Bachelor's Thesis in collaboration with Tornos, this project began with Unity ML-Agents in C# and later transitioned to multi-agent training in Python with Ray RLlib.
- Enhanced the model's performance by optimizing hyperparameters and reward functions, resulting in efficient production of specific orders with a minimized number of steps.

MoDoS
`Python` `TensorFlow` `Keras` `TensorFlow Serving` `Docker` `Flask`

- Created an image classifier to improve safety and accessibility in mobility for seniors and disabled individuals by achieving an 81% F1-score over a highly imbalanced dataset.
- Effectively addressed data imbalance challenges by devising a two-stage model, involving the comparison and fine-tuning of image classifiers.
- Successfully deployed the model for real-time use with TensorFlow Serving.

GANime
`Python` `TensorFlow` / `PyTorch` `PyTorch-Lightning` `HuggingFace` `Docker`

- Developed as a Master's Thesis in collaboration with Osaka Metropolitan University a video generation model employing a frame-by-frame approach resulting in realistic motion and achieving an 85% similarity score with the ground truth data.
- Used a VQ-GAN for image generation and a GPT-2 Transformer for the next frame prediction.
- Gained practical exposure by reimplementing the model in the PyTorch framework.

DL4Space
`Python` `PyTorch` `PyTorch-Lightning` `Scikit-Learn` `Docker` `LIME` `SQL`

- Created a deep learning-based prototype for an ESA project targeting spacecraft operations employing Explainable AI methodologies to accurately identify the root cause of anomalies.
- Achieved a 15% efficiency improvement compared to conventional methods.
- Delivered comprehensive documentation encompassing the full pipeline, from data importation and transformation to model training, facilitating ease of use and replication.

Estigrappe3D
`Python` `PyTorch` `PyTorch-Lightning` `Scikit-Learn` `Docker`

- Actively involved in a collaborative project with Changins, a University of Viticulture and Oenology, focusing on the estimation of grape volume and weight utilizing images with corresponding depth maps.
- Assessed and validated previous work for accuracy, while implementing standard data science methodologies.
- Currently enhancing project outcomes by extracting and leveraging cloud points from depth maps.