

Jamal Boussouf

Data Scientist — Computer Vision

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Profile

Jamal Boussouf, a Master's student in Data Science and Smart Systems, brings a strong foundation in computer science and mathematics, enriched by practical projects in AI and data science. His work includes projects like diabetic retinopathy detection and speech recognition enhancement using deep learning and GANs. Jamal's ChatEstimate project combines machine learning and chatbot technology for house price prediction, while his stock analysis project demonstrates his proficiency in business analytics. With publications on blockchain and cutting-edge technologies, along with expertise in SQL, Python, and machine learning frameworks, Jamal is well-prepared for roles in AI and data science.

Areas of Expertise

Data science, Computer vision, Healthcare, Object Detection, Image Denoising

Communications & Publications

IOTA TANGLE 2.0: AN OVERVIEW, *The EDP Audit, Control, and Security Newsletter* **Rabat, MAR 2023**

○ Article URL: <https://www.tandfonline.com/doi/full/10.1080/07366981.2023.2293322>

Signing Algorithms Behind Blockchain Digital Transactions, *MASI* **FPN, Nador, MAR Oct. 23, 2022**

○ Certificate URL: <https://drive.google.com/drive/folders/1krlp5X9WD4GDSQc-1NXPieC8cYMjK9ac>

Professional Experience

Internship in Healthcare Image Analysis using Computer Vision, **Rabat, MAR 06/2024 - present**

- Collaborated with the DeepEcho startup team as a Data Scientist.
- Developed computer vision models for fetal ultrasound to detect and identify baby organs.
- Utilized Vision Transformers (ViTs) for organ detection.
- Implemented techniques to select the optimal frame where organs are clearly visible for measurement.
- Addressed noise issues in ultrasound images, including speckle and regular noise.
- Employed GAN architectures to train models for image denoising, enhancing the main model's ability to detect organs in video frames.

Projects

Advancing Diabetic Retinopathy Detection: Fine-Tuning ViT Models, **Nador, MAR 06/2023 - 07/2024**

- The system automates the classification of retinal images into three categories: No DR, Mild, and Proliferative, to facilitate the early detection and treatment of diabetic retinopathy.
- Fine-tuned a pre-trained ViT model on a large dataset of retinal images from Kaggle, achieving over 97% accuracy in classifying diabetic retinopathy severity levels.
- Evaluated the model's performance using a confusion matrix on an independent testing dataset to identify potential areas of misclassification and optimize accuracy and specificity.
- Integrated the fine-tuned model into a web application using Flask, enabling easy upload and analysis of retinal images.
- Project URL: <https://jboussouf.github.io//portfolio/portfolio-4/>

Overcoming Speech Recognition Challenges with GAN based Solutions, **Nador, MAR 12/2022 - 02/2023**

- Developed advanced GAN-based solutions to address challenges in speech recognition, particularly in noisy environments.
- Transformed audio data into spectrogram format and augmented it with random noise at different levels to simulate real-world environmental factors, enhancing model robustness and generalization.
- Implemented an autoencoder architecture as the generator in the SEGAN model, improving noise reduction and enhancing the performance of the CNN model in noisy conditions.
- The CNN model achieved an accuracy of 40% on noisy data, which improved to 60% after noise removal using the autoencoder within the SEGAN architecture.
- The project demonstrated the potential of GAN-based solutions in improving speech recognition technology, emphasizing the importance of careful evaluation and optimization of various components and techniques.
- Project URL: [jboussouf/Overcoming-Speech-Recognition-Challenges-with-GAN-based-Solutions](https://github.com/jboussouf/Overcoming-Speech-Recognition-Challenges-with-GAN-based-Solutions)

Education

MS of Data Science and Smart systems *University Mohammed Premier* **Nador, MAR** 2022 - Present

- In my Data Science and Smart Systems master's program, I immersed myself in vital fields like Data Science, Data Analysis, Machine Learning, Data Mining, Data Warehousing, and Big Data. These areas equipped me with skills to extract insights, interpret data, build predictive models, uncover patterns, design efficient storage systems, and manage large datasets effectively.

B.Sc in computer science and mathematics *University Mohammed Premier* **Nador, MAR** 2018 - 2022

- In my Mathematics and Computer Science Bachelor's program, I focused on essential areas including Java programming, Operating Systems, Networking Administration, Databases Administration, and Web Administration. This involved mastering Java for software development, understanding Operating Systems functionalities, managing networks, organizing data in databases, and effectively handling web-based systems.

Science of physic and mathematics *Farkhana High School* **Nador, MAR** 2015 - 2018

- Throughout high school, I focused on Mathematics and Physics. Mathematics honed my problem-solving skills through branches like algebra and calculus, while Physics deepened my understanding of natural phenomena such as mechanics and electricity.

Skills

Python - Data Science - Machine Learning - Deep Learning - CNN - Vision Transformers - Pytorch - TensrfLOW - SQL Databases - MongoDB - Firebase - Java - OpenCV - Pillow - Data Analyses.

Languages

- **Tamazight** [Native]
- **Arabic** [Native] - Learning
- **English** [Intermediate] - B1
- **French** [Basic] - A1