Ayoub EL HOUDRI

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Education

CY Paris University, ENSEA and ETIS Lab Sept 2022 - 2023
MRes. Artificial Intelligence and Complex Systems (Specialization in Computational Neuroscience) *Cergy, France*

CY Tech Sept 2020 - 2023
MEng. Applied Mathematics and Computer Science (Double Major) *Cergy, France*

Classe Préparatoire of Lycée Jean Bart Sept 2018 - 2020
BSc. Mathematics, Physics and Computer Science *Dunkirk, France*

Experience

Karmen Jun 2022 - Sept 2022
Data Scientist - Intern *Paris, France*

As a member of Karmen's research and development team, I participated in a project aimed at developing an algorithm capable of extracting table data from scanned documents while preserving the original table structure. Our approach involved leveraging optical character recognition, image processing, and deep learning techniques.

French National Centre for Scientific Research Jan 2022 - May 2022
Research Assistant *Cergy, France*

I conducted research on the impact of AI on the labor market in France by gathering and analyzing data from AI-related companies. Utilizing advanced machine learning techniques, I generated valuable insights and drew informed conclusions.

Digimind Labs Jun 2021 - Sept 2021
Research Engineer - Intern *Berlin, Germany*

I contributed to the creation of a state-of-the-art deep learning model for reconstructing the shape of specific objects from a single RGB image, using 3D synthetic data for training.

Projects

Investigating the Remapping of Neural Coding for Navigation and Working Memory
This research project, conducted under the supervision of Pr. Philippe Gaussier at ETIS Lab, consists of using computational neuroscience methods to investigate the relationship between visual place cells and path integration in order to understand the mechanisms behind place cells remapping in the hippocampus. The aim is to improve our understanding of how the hippocampus produces and maintains a coherent working memory over time.

Electricity Price Modeling for Futures Contracts in France and Germany
This project was completed as part of a challenge organized by ENS Ulm and Qube Research and Technologies. The aim was to explain the daily price variation of electricity futures contracts in France and Germany using weather measurements, energy, and commercial data for short-term contracts (24h). The performance was evaluated using Spearman's correlation.

Compressed Sensing: A Mathematical Model for Signal Compression
In this project, we implement and compare some models of data compression which consists of reconstructing a signal from fewer samples that do not satisfy the Nyquist-Shannon sampling condition, a process called compressed sensing. The lower sampling rate makes storing and processing this data much more efficient.

Awards

National Mathematical Olympiads Ranked 10th in the National Olympiads of Mathematics in 2018

Excellence Scholarship A scholarship offered to the best high school students in the country to study abroad

Skills

Software Skills Python (NumPy, SciPy, Scikit-Learn, Pandas, NLTK, PyTorch, OpenCV, BeautifulSoup, Quantlib, NEURON) . R . C . SQL . Linux . HTML/CSS . LaTeX. MATLAB . Git/GitHub . Docker . Azure

Mathematical Skills Time Series Forecasting . Dimensionality Reduction . Linear Algebra . Probability Theory . Markov Chains . Differential Equations . Advanced Statistics . Deep Learning . Mathematical Modeling . Optimization. Machine Learning . Graph Theory . Differential Geometry . Image Processing and Computer Vision . Data Augumentation . Topology

Languages English (Bilingual proficiency) . French (Native proficiency) . Spanish (Intermidate proficiency)