EMNA SELLAMI

Intelligent Decision Making Methods Master Student

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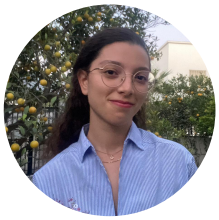

EXPERIENCE

Reasearch Toward a General Hyper-Heuristic Selection Approach for Bi-Level Optimization Using Q-Learning and Self-Adaptive Strategies

Intern

February-December 2025 Smart Lab

- Designed a general hyper-heuristic framework for solving complex bi-level combinatorial optimization problems.
- Developed and implemented two decision mechanisms: a self-adaptive strategy based on diversity and convergence metrics, and a Q-learning–based strategy leveraging accumulated experience.
- Proposed and integrated multiple lower-level heuristics to reduce computational cost while preserving solution quality.
- Applied the framework to a new formulated Electric Vehicle Routing and production–distribution problems.
- Conducted extensive experimental evaluations to assess performance and robustness.

Implementation of an Information Retrieval System for Tunisian E-Newspapers

Intern

June- July 2024 Business & AI

- Designed and implemented a tool leveraging G_News and search engines to dynamically identify relevant news sources for automated Source Discovery.
- Developed a robust web scraping tool using Beautiful Soup and Requests to extract data efficiently from diverse websites.
- Preprocessed and normalized multilingual text data using NLP Techniques to guarantee the consistency of the data.
- Applied NER to extract key entities such as names from textual content.

Implementation of a Human Resources Decision-Making Solution for Employee and Project Monitoring

Intern

February - May 2023 Onetech Business Solutions

- Designed and implemented a scalable data warehouse solution to optimize and automate the storage and integration of multi-source data.
- Conducted efficient Extraction, Transformation, and Loading (ETL) of data .
- Created reports and dynamic dashboards to visualize Key Performance Indicators (KPIs) related to employee assiduity and productivity.

EDUCATION

Master degree in Intelligent Decision Making Methods

Mention Bien

December 2025 ISG Tunis

Bachelor degree in business intelligence

Mention Bien

June 2023 ISG Tunis

Baccalaureate degree in experimental science

Mention assez bien

June 2020 Lycée El Attarine

TECHNICAL SKILLS

- **Optimization**: Multi-objective optimization, Bi-level optimization, Evolutionary algorithms, Hyper-heuristics.
- **Programming skills**: Python:NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, NLTK, C, JAVA, SQL.
- **Fuzzy logic**: Fuzzy programming using scikit-fuzzy.
- **Machine Learning**: Supervised and Unsupervised learning algorithms.
- Implementation of Evolutionary algorithms using python.
- **Microsoft BI Tools**: SSMS, SSIS, PowerBI.
- **Research Analysis**: Analyze academic papers and extract key insights.

LANGUAGES

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

ACHIEVMENTS

- **Certification**: Business analysis par la pratique The Team

PROJECTS

Explainability in Multi-Agent Systems

Academy Project

December 2024

- Conducted an exhaustive literature review on the Explainability in Multi-Agents Systems and explored different challenges and the proposed approach to tackle them.

Re-sampling of multi-class imbalanced data using belief function theory and ensemble learning

Academy Project

November 2024

- State of the art of existing re-sampling methods and proposing a re-sampling technique with belief function theory to handle class imbalance.
- Use ensemble learning with belief function theory to handle ambiguity in data.

Experimenting with Reinforcement Learning (RL) and Deep RL Using OpenAI Gymnasium

Academy Project

November 2024

- Implemented and trained a Deep Q-Network (DQN) for solving a Reinforcement Learning (RL) problem, such as a game or a control task.

Word Embedding Using CBOW

Academy Project

November 2024

- Created a Continuous Bag of Words (CBOW) model to generate word embeddings, enabling semantic understanding of textual data.

Implementation of Multi-Layer Perceptron

Academy Project

November 2024

- Implemented a Multi-Layer Perceptron for solving supervised learning tasks such as classification or regression.
- Trained, and evaluated an MLP to approximate complex functions from input features to output predictions.

Implementation of an ontology for additive manufacturing

Academy Project

December 2024

- Implemented on Protégé using Standford Method, to formalize expert knowledge into a machine-interpretable format.