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EDUCATION

Université du Littoral Côte d'Opale & Université Hassan II (cotutelle) Calais, France

Ph.D. in Computer Science & Artificial intelligence in Industry 4.0

Advisors: Mourad Bouneffa, Mohamed Hamlich

Sep. 2019–Sep. 2022

Thesis title: Towards Efficient and Explainable Automated Machine Learning Pipelines Design

Committee: P. Parrend, A. Azmani, S. Ventura, S. Verel, A. Majda, N. Youssfi

Université Sidi Mohammed Ben Abdellah

Fez, Morocco

M.S. in Computer Science–Data science

2017–2019

– Thesis: “Sentiment analysis of Moroccan Tweets using text mining”

* *USMBA award for best M.S. dissertation in Computer Science*

Université Sidi Mohammed Ben Abdellah

Fez, Morocco

B.S. in Computer Science

2014–2017

– Thesis: “Design and development of a web platform for managing the prefecture’s archives”

EXPERIENCE

Temporary Lecturer and Research Assistant

Calais, France

Engineering School of Littoral Côte d'Opale

Sep 2022– Now

– Automated machine learning researcher

– Data science lecturer

Freelancer

Different AI, data analysis, and engineering projects

2020– Now

Lecturer in computer science

Calais, France

Engineering School of Littoral Côte d'Opale

Sep. 2021 – Jul. 2022

– Computer science lecturer

Research Collaborator

Casablanca, Morocco

Study and Research Center for Engineering and Management, HESTIM

Jun. 2020 – Sep. 2022

– Automated machine learning researcher

Data Scientist

Rabat, Morocco

The Good Data Factory

Aug – Dec 2019

– Data analysis & Computer vision projects

Research internship

Fez, Morocco

The Intelligent Systems & Applications Laboratory

Jan – Jul 2019

– Natural Language Processing researcher

TEACHING

- **Assistant Lecturer** at the Engineering School of Littoral Côte d'Opale Sep.2022 – Now
Artificial intelligence, Business Intelligence & Big data
Advanced OOP in C++
Bases de Données
- **Teaching Assistant** at the Engineering School of Littoral Côte d'Opale Sep.2021 – Jul. 2022
Advanced algorithmic with OOP in Python & C++
Architecture des ordinateurs
Bases de Données
- **Teaching Assistant** at the university Institute of Technology of Littoral Côte d'Opale Sep.2021 – Jul. 2022
Advanced algorithmic with OOP in Python & Java
Bases de Données
Mathematics

RESEARCH INTERESTS

- Automated machine learning
- Artificial Intelligence and Big Data
- Explainability of Artificial Intelligence
- Research software engineering
- Natural language processing
- Computer vision

TEACHING INTERSETS

- Artificial intelligence
- Big data & Cloud computing
- Bases de données & Data mining
- Algorithmic & programming languages
- Statistics & Data analysis
- Mathematics

COMPETITIVE GRANTS AND FELLOWSHIPS

- **University of Milan** - 4EU+ Summer school on AI fellowship Aug. 2022
- **Université du Littoral Côte d'Opale** - PhD grant 2019-2022
- **HESTIM Engineering and Business School** - PhD grant 2019-2022

AWARDS

- 1st prize: Enjoyeering junior (Robotics) - 2016
- 1st prize: PROTOTOP (Robotics) - 2017
- 2nd prize: Entrepreneurship project (AUF Maghreb)
- 2nd prize: Challenge Hackathome (Accenture France)

PROFESIONAL CERTIFICATIONS

- **IBM** Data scientist Professional certificate
- **IBM** AI engineering Professionnal certificate
- **DELL EMC** Data science & Big data analytics
- **University of Milan** AutoML competencies certificate

COMMUNITY ROLES

- **Member of Technical Program Committee**
 - *The 16th International Conference on Information Processing*
 - *The 19th International Conference on Mobile Systems and Pervasive Computing*
 - *The 4th International Conference on Smart Applications and Data Analysis for Smart Cyber-Physical Systems*
 - *The 1st International Conference on AI-generated Content (AIGC2023)*
- **Reviewer**
 - *Information Fusion*
 - *Journal of Computing in Higher Education*
 - *Intelligent Information Management Journal*
 - *Journal of Computational and Cognitive Engineering*

Journals

- [1] **M. Garouani** et al. “Autoencoder-kNN meta-model based data characterization approach for an automated selection of AI algorithms”. In: *Journal of Big Data* 10.1 (Feb. 2023). DOI: 10.1186/s40537-023-00687-7.
- [2] **M. Garouani** et al. “Using meta-learning for automated algorithms selection and configuration: an experimental framework for industrial big data”. In: *Journal of Big Data* 9.1 (Apr. 2022). DOI: 10.1186/s40537-022-00612-4.
- [3] **M. Garouani** et al. “Towards big industrial data mining through explainable automated machine learning”. In: *The International Journal of Advanced Manufacturing Technology* 120.1-2 (Feb. 2022), pp. 1169–1188. DOI: 10.1007/s00170-022-08761-9.
- [4] **M. Garouani** et al. “AMLBIID: An auto-explained Automated Machine Learning tool for Big Industrial Data”. In: *SoftwareX* 17 (Jan. 2022), p. 100919. DOI: 10.1016/j.softx.2021.100919.
- [5] M. Chaabi, M. Hamlich, and **M. Garouani**. “Product defect detection based on convolutional autoencoder and one-class classification”. In: *IAES International Journal of Artificial Intelligence* 12 (2022), pp. 912–920. DOI: 10.11591/ijai.v12.i2.pp912-920.
- [6] **M. Garouani** et al. “AMLBIID 2.0: An auto-explained Automated Machine Learning tool for Big Industrial Data”. In: *SoftwareX* (To appear).
- [7] **M. Garouani**, A. Ahmad, and M. Bouneffa. “A Survey and Perspective View of Meta-Learning for Automated Algorithms Selection and Parametrization”. In: *Submitted to ACM Computing Surveys* (2023).
- [8] **M. Garouani** and M. Bouneffa. “Automated Machine Learning Hyperparameters Tuning through Meta-Guided Bayesian Optimization”. In: *Submitted to Progress in Artificial Intelligence* (2023).

Conferences

- [9] **M. Garouani**, A. Ahmad, and M. Bouneffa. “Explaining Meta-Features Importance in Meta-Learning Through Shapley Values”. In: *Proceedings of the 25th International Conference on Enterprise Information Systems - Volume 1: ICEIS, INSTICC*. SciTePress, 2023, pp. 591–598. DOI: 10.5220/0011986600003467.
- [10] **M. Garouani** et al. “Scalable Meta-Bayesian Based Hyperparameters Optimization for Machine Learning”. In: *Smart Applications and Data Analysis*. Springer International Publishing, 2022, pp. 173–186. DOI: 10.1007/978-3-031-20490-6_14.
- [11] M. Choaib, **M. Garouani**, and al. “Automated Decision Support Framework for IoT: Towards a Cyber Physical Recommendation System”. In: *Proceedings of the 25th International Conference on Enterprise Information Systems - Volume 1: ICEIS, INSTICC*. SciTePress, 2023, pp. 365–373. DOI: 10.5220/0011848900003467.
- [12] M. Chaabi, M. Hamlich, and **M. Garouani**. “Evaluation of AutoML Tools for Manufacturing Applications”. In: *Advances in Integrated Design and Production II*. Cham: Springer International Publishing, 2023, pp. 323–330. DOI: 10.1007/978-3-031-23615-0_33.
- [13] **M. Garouani** et al. “Toward an Automatic Assistance Framework for the Selection and Configuration of Machine Learning Based Data Analytics Solutions in Industry 4.0”. In: *Proceedings of the 5th International Conference on Big Data and Internet of Things*. Springer International Publishing, 2022, pp. 3–15. DOI: 10.1007/978-3-031-07969-6_1.

- [14] **M. Garouani** et al. “Towards meta-learning based data analytics to better assist the domain experts in industry 4.0”. In: *Artificial Intelligence in Data and Big Data Processing*. Cham: Springer International Publishing, 2022, pp. 265–277. DOI: 10.1007/978-3-030-97610-1_22.
- [15] **M. Garouani** and K. Zaysa. “Leveraging the automated machine learning for Arabic opinion mining: A preliminary study on AutoML tools and comparison to human performance”. In: *Digital Technologies and Applications*. Lecture notes in networks and systems. Cham: Springer International Publishing, 2022, pp. 163–171. DOI: 10.1007/978-3-031-02447-4_17.
- [16] **M. Garouani**, H. Chrita, and J. Kharroubi. “Sentiment analysis of Moroccan tweets using text mining”. In: *Digital Technologies and Applications*. Lecture notes in networks and systems. Cham: Springer International Publishing, 2021, pp. 597–608. DOI: 10.1007/978-3-030-73882-2_54.
- [17] **M. Garouani** et al. “Towards the Automation of Industrial Data Science: A Meta-learning based Approach”. In: *Proceedings of the 23rd International Conference on Enterprise Information Systems*. SCITEPRESS - Science and Technology Publications, 2021. DOI: 10.5220/0010457107090716.
- [18] **M. Garouani** and J. Kharroubi. “Towards a new lexicon-based features vector for sentiment analysis: Application to Moroccan Arabic tweets”. In: *Advances in Information, Communication and Cybersecurity*. Lecture notes in networks and systems. Cham: Springer International Publishing, 2022, pp. 67–76. DOI: 10.1007/978-3-030-91738-8_7.
- [19] **M. Garouani** and J. Kharroubi. “MAC: An open and free Moroccan Arabic corpus for sentiment analysis”. In: *Innovations in Smart Cities Applications Volume 5*. Lecture notes in networks and systems. Springer International Publishing, 2022, pp. 849–858. DOI: 10.1007/978-3-030-94191-8_68.

Softwares

- [20] **M. Garouani**, A. Ahmad, and M. Bouneffa. *AMLBID: An auto-explained Automated Machine Learning tool for Big Industrial Data*. Version 0.2. July 2022. DOI: 10.1016/j.softx.2021.100919.