GAROUANI Moncef

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Education

University Littoral Côte d'Opale & University Hassan II (cotutelle) — Calais, France
Ph.D. in Computer Science - Artificial intelligence — Sep. 2019–2022
Advisors : Mourad Bouneffa , Mohamed Hamlich
Thesis title : Towards Efficient and Explainable Automated ML Pipelines Design
Committee : P. Parrend, A. Azmani, S. Ventura, S. Verel, A. Majda, N.Youssfi

University Sidi Mohammed Ben Abdellah(USMBA) — 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*

Professionnal cursus

Associate Professor (Maître de Conférences) — Toulouse, France
University Toulouse Capitole — Sep 2023- Now
- Institut de Recherche en Informatique de Toulouse (IRIT) laboratory
- Systèmes d'Informations Généralisés (SIG) team

Temporary Lecturer and Research Assistant (ATER) — Calais, France
Engineering School of Littoral Côte d'Opale — Sep. 2022- Aug. 2023
- Automated machine learning researcher
- Data science lecturer

Lecturer in Computer Science — Calais, France
Engineering School of Littoral Côte d'Opale — Sep.2021 – Jul. 2022

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 interests

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

Teaching intersets

- Artificial intelligence
- Big data & Explainable AI
- Bases de données & Data mining
- Algorithmic & programming languages
- Statistics & Data analysis

Teaching

- **Associate Professor** (**MCF**) at the University Toulouse Capitole — Sep. 2023 – Now
  Explainable Artificial Intelligence , Business Intelligence , Programmation
  Data Integration with Talend , Big Data , Bases de Données
- **Assistant Lecturer** (**ATER**) at the Engineering School of Littoral Côte d'Opale — Sep. 2022 – Aug. 2023
  Big data , Explainable Artificial Intelligence , Business Intelligence
  Advanced OOP in C++ , Bases de Données
- **Teaching Assistant** at the Engineering School of Littoral Côte d'Opale — Sep. 2021 – Aug. 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 – Aug. 2022
  Advanced algorithmic with OOP in Python & Java
  Bases de Données , Mathematics

Community roles

- **Member of Technical Program Committee**

  - *The European Conference on Artificial Intelligence (ECAI)*
  - *The International Conference on Tools with Artificial Intelligence (ICTAI)*
  - *The International Web Information Systems Engineering conference (WISE)*
  -*The International Conference on Information and Knowledge Management (CIKM)*
  - *The International Conference on Information Processing (ICIP)*

- **Reviewer**
  - *Information Fusion (IF 15.5)*
  - *Scientific Reports (IF 3.9)*
  - *Progress in Artificial Intelligence (IF 4.2)*
  - *Journal of Computing in Higher Education (IF 4.5)*
  - *Engineering Applications of Artificial Intelligence (IF 7.5)*

Scientific Supervision

- **PhD students (co-leading):**

H. Dekdegue. Explanation-Guided Deep Learning in Computer Vision — IRIT, Toulouse
Supervisor: J. Mothe, L. Chaari — Oct 2025- Now

K. Rabah. Active Learning methods for aircraft fleet data collection optimization — IRIT, Toulouse
Supervisor: O. Teste, J. Aligon *(CIFRE Airbus)* — Feb 2025- Now

K. El Azaar. Explainable Artificial Intelligence in Climate Change — IRIT, Toulouse
Supervisor: F. Ravat, M. Hamlich *(cotutelle with Hassan II University)* — Sept 2024- Now

Y. Baehr. Artificial Intelligence for Monitoring Fire Risks and their Ecological Impact — IRIT, Toulouse
Supervisor: J. Mothe, J-C. Calvet *(Meteo France)* — Sept 2024- Now

P.-P.Cavallera. Temporal Graphs : Towards User-oriented Analysis — IRIT, Toulouse
Supervisor: F. Ravat *(CIFRE Activus)* — Mai 2024- Now

V. Blase. Explainable Active Learning for early prediction of frailty syndrome — IRIT, Toulouse
Supervisor: O. Teste, I. Ader-perarnau — Sept 2023- Now

M. Choaib. Artificial Intelligence for Optimized Cyber Physical Systems in Industry 4.0 — LISIC, Calais
Supervisor: M. Bouneffa, Y. Mohanna *(cotutelle with Lebanese University)* — Feb 2022- Now

- **Postdoc (co-leading):**

V. YEPMO. Automated Explainable Machine Learning — IRIT, Toulouse
Supervisor: A. Peninou, O. Teste — Sept 2024- Now

Research Publications (Since 2021)

- **Journals**
  - *10 publications in international journals* (e.g Information Fusion (IF 15.5), J of Big Data (IF 8.6), The Int. J of Advanced Manufacturing Technology (IF 3.4), Progress in Artificial Intelligence (IF 4.2), SoftwareX (IF 3.4))
- **Conferences**
  - *24 publications in international conferences* (SIGIR$^{A^*}$, $ECML^{A}$, $ECIR^{A}$, $ICTAI^{B}$, $WISE^{B}$, $ESANN^{B}$, *etc.*)
- ***Software***
  - *1 software published in the Python Package Index (PyPI) and indexed in the SoftwareX journal*

Journals

[1] **M. Garouani**, A. Barhrhouj, and O. Teste. "XStacking: An Effective and inherently Explainable Framework for Stacked Ensemble Learning". In: *Information Fusion* (2025). DOI: 10.1016/j.inffus.2025.103358.

[2] M. Choaib, **M. Garouani**, M. Bouneffa, and al. "IoT-AID: An Automated Decision Support Framework for IoT". In: *SN Computer Science* 5.4 (Apr. 2024). DOI: 10.1007/s42979-024-02780-x.

[3] **M. Garouani** and M. Bouneffa. "Automated machine learning hyperparameters tuning through meta-guided Bayesian optimization". In: *Progress in Artificial Intelligence* (Jan. 2024). DOI: 10.1007/s13748-023-00311-y.

[4] **M. Garouani**. "An experimental survey and Perspective View on Meta-Learning for Automated Algorithms Selection and Parametrization". In: *arxiv* (2025). arXiv: 2504.06207 [cs.LG].

[5] **M. Garouani**, M. Bouneffa, A. Ahmad, and M. Hamlich. "Version [2.0]- [AMLBID: An auto-explained Automated Machine Learning tool for Big Industrial Data]". In: *SoftwareX* 23 (July 2023), p. 101444. DOI: 10.1016/j.softx.2023.101444.

[6] **M. Garouani**, A. Ahmad, M. Bouneffa, and M. Hamlich. "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.

[7] **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.

[8] **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.

[9] **M. Garouani**, A. Ahmad, M. Bouneffa, and M. Hamlich. "AMLBID: 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.

[10] 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 (Oct. 2022), pp. 912–920. DOI: 10.11591/ijai.v12.i2.pp912-920.

Conferences

[11] T. Yeshambel, **M. Garouani**, S. Molina, and J. Mothe. "Dense Retrieval for Low Resource languages - the Case of Amharic Language". In: *Proceedings of the 48th International ACM SIGIR Conference on Research and Development in Information Retrieval*. SIGIR '25. Padua, Italy, 2025, pp. 3098–3100. DOI: 10.1145/3726302.3730274.

[12] **M. Garouani**, A. Barhrhouj, and O. Teste. "XStacking: Explanation-Guided Stacked Ensemble Learning". In: 2025. arXiv: 2507.17650 [ECML-PKDD 2025- Nectar Track].

[13] **M. Garouani** and A. Barhrhouj. "From Black-Box Tuning to Guided Optimization via Hyperparameters Interaction Analysis". In: *2025 IEEE 37th International Conference on Tools with Artificial Intelligence (ICTAI)*. [To appear].

[14] H. Carlesso, M. E. Patulea, **M. Garouani**, and al. "GeMix: Conditional GAN-Based Mixup for Improved Medical Image Augmentation". In: 2025. arXiv: 2507.15577 [CBMI 2025- To appear].

[15] M. Ben Yahia, **M. Garouani**, and J. Aligon. "Multimodal Explainable Automated Diagnosis of Autistic Spectrum Disorder". In: *ESANN 2025 proceesdings*. ESANN 2025. Ciaco - i6doc.com, 2025, pp. 329–334. DOI: 10.14428/esann/2025.es2025-72.

[16] T. Yeshambel, **M. Garouani**, and al. "Advancing Amharic Information Retrieval: A Comparative Analysis of Traditional, Neural, and Transformer-Based Models". In: *2025 8th International Conference on Information and Computer Technologies (ICICT)*. 2025, pp. 223–228. DOI: 10.1109/ICICT64582.2025.00041.

[17] **M. Garouani**, F. Ravat, and N. Valles-Parlangeau. "Model Lake : A New Alternative for Machine Learning Models Management and Governance". In: *Web Information Systems Engineering – WISE 2024*. Ed. by M. Barhamgi, H. Wang, and X. Wang. Singapore: Springer Nature Singapore, 2025, pp. 133–144. DOI: 10.1007/978-981-96-0573-6_10.

[18] M. Choaib, **M. Garouani**, M. Bouneffa, and A. Ahmad. "IoT-AID: Leveraging XAI for Conversational Recommendations in Cyber-Physical Systems". In: *Proceedings of the 27th International Conference on Enterprise Information Systems*. ICEIS, SCITEPRESS - Science and Technology Publications, 2025, pp. 671–679. DOI: 10.5220/0013497100003929.

[19] K. El Azaar, **M. Garouani**, A. Chakir, M. Hamlich, and F. Ravat. "A Comprehensive Study on Explainable Energy Consumption Patterns in Smart Buildings". In: *New Technologies, Artificial Intelligence and Smart Data. INTIS 2024*. Cham: Springer Nature Switzerland, 2024, [To appear].

[20] M. Choaib, **M. Garouani**, M. Bouneffa, and Y. Mohanna. "IoT Sensor Selection in Cyber-Physical Systems: Leveraging Large Language Models as Recommender Systems". In: *2024 10th International Conference on Control, Decision and Information Technologies (CoDIT)*. 2024, pp. 2516–2519. DOI: 10.1109/CoDIT62066.2024.10708357.

[21] A.-G. Chifu, S. Déjean, **M. Garouani**, J. Mothe, and al. "Can We Predict QPP? An Approach Based on Multivariate Outliers". In: *Advances in Information Retrieval. ECIR 2024*. Springer Nature Switzerland, 2024, pp. 458–467. DOI: 10.1007/978-3-031-56063-7_38.

[22] A.-G. Chifu, S. Déjean, **M. Garouani**, J. Mothe, and al. "Prédictibilité de la prédiction de la performance des requêtes? Une approche basée sur les valeurs aberrantes multivariées". In: *CORIA 2024 (COnférence en Recherche d'Information et Applications), 3-4 avril 2024, La Rochelle, France*. 2024.

[23] **M. Garouani** and M. Bouneffa. "Unlocking the Black Box: Towards Interactive Explainable Automated Machine Learning". In: *Intelligent Data Engineering and Automated Learning. IDEAL 2023*. Cham: Springer Nature Switzerland, 2023, pp. 458–469. DOI: 10.1007/978-3-031-48232-8_42.

[24] **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.

[25] **M. Garouani**, A. Ahmad, M. Bouneffa, and M. Hamlich. "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.

[26] 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.

[27] 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.

[28] **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.

[29] **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.

[30] **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.

[31] **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.

[32] **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.

[33] **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.

[34] **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

[35] **M. Garouani**, M. Bouneffa, and A. Ahmad. *AMLBID 2.0: An auto-explained Automated Machine Learning tool for Big Industrial Data*. Version 2.0. June 2023. DOI: 10.1016/j.softx.2023.101444.

[36] **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.