GAROUANI Moncef

- Born April 04, 1997 in El-Menzel, Morocco, 27 years
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- Github: LeMGarouani

EDUCATION

University of Littoral Côte d'Opale & Hassan II University (cotutelle)   Calais, France
Ph.D. in Computer Science - Artificial intelligence
Advisors : Mourad Bouneffa , Mohamed Hamlich   Sep. 2019–2022
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 unig 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

- Toulouse Research Institute In Information Technology (IRIT)
- 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
- Information retrieval

TEACHING EXPERIENCE

- Artificial intelligence
- Explainable Artificial intelligence
- Data bases & Data mining
- Business intelligence
- Algorithmic & programming languages

Competitive grants and fellowships

- **CNRS France** - Research project funding   Jan. 2024
- **University of Milan** - 4EU+ Summer school on AI fellowship   Aug. 2022
- **CNRST Morocco** - Research Excellence Scholarship   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 Profesionnal certificate
- **DELL *EMC*** Data science & Big data analytics
- **University of Milan** AutoML competencies certificate

Community roles

- **Member of Technical Program Committee**
  - *The 27th European Conference on Artificial Intelligence*
  - *The 25th International Web Information Systems Engineering conference*
  - *The 19th International Conference on Mobile Systems and Pervasive Computing*
  - *The 16th International Conference on Information Processing*
- **Reviewer**
  - *Information Fusion (IF 14.7)*
  - *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):**

  P.I. Thiam. Artificial Intelligence in Territorial and Agricultural Food Systems   IRIT, Toulouse
  Supervisor: J. Mothe, M. Teisseire   Oct 2024- Now

  Y. Baehr. Artificial Intelligence for Monitoring Fire Risks and their Ecological Impact   IRIT, Toulouse
  Supervisor: J. Moth, J-C. Calvet   Sep 2024- Now

  P.-P.Cavallera. Temporal Graphs : Towards User-oriented Analysis   IRIT, Toulouse
  Supervisor: F. Ravat   Mai 2024- Now

  M. Choaib. Artificial Intelligence for Optimized Cyber Physical Systems in Industry 4.0   LISIC, Calais
  Supervisor: M. Bouneffa, Y. Mohanna   Feb 2022- Now

- **Master 2 Students :**

  M. Benyahya. Multi-Modal Explainable Machine Learning for Automated ASD diagnosis   IRIT, Toulouse
  Funding: CNRS (4500€)   Feb-Aug 2024

  I. Chkifa. Deep Learning for Early ASD Detection and Diagnosis   UMI, Morocco
  Co-supervisor: A. Majda   Feb-Aug 2024

Publications (Since 2021)

- **Journals**
  - *8 publications in international journals (e.g. 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**
  - *18 publications in international conferences (ECIR, ICTAI, WISE, ICEIS, IDEAL, etc.)*
- **Softwares**
  - *1 software published in the Python Package Index (PyPI) and indexed in the SoftwareX journal*

Journals

[1] 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.

[2] **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.

[3] **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.

[4] **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.

[5] **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.

[6] **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.

[7] **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.

[8] 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.

[9] **M. Garouani**, A. Ahmad, and M. Bouneffa. "A Survey and Perspective View of Meta-Learning for Automated Algorithms Selection and Parametrization". In: (Mar. 2024). [**Preprint**]. DOI: 10.21203/rs.3.rs-4106982/v1.

Conferences

[10] **M. Garouani**, J. Mothe, A. Barhrhouj, and J. Aligon. "Investigating the Duality of Interpretability and Explainability in Machine Learning". In: *2024 IEEE 36th International Conference on Tools with Artificial Intelligence (ICTAI)*. IEEE, 2024 [**To appear**].

[11] **M. Garouani**, F. Ravat, and N. Vallès-Parlangeau. "Model Lake: a New Alternative for Machine Learning Model Management and Governance". In: *Web Information Systems Engineering – WISE 2024*. Springer Nature Singapore, 2024 [**To appear**].

[12] 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**].

[13] 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.

[14] 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.

[15] 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.

[16] **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.

[17] **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.

[18] **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.

[19] 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.

[20] 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.

[21] **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.

[22] **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.

[23] **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.

[24] **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.

[25] **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.

[26] **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.

[27] **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

[28] **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.

[29] **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.