

PhD. Zahra KODIA

PhD in Computer Science

Habilitation in Management (Business Computing)

Associate professor at University of Tunis

Personal Information

Full name : Zahra Kodia Aouina**Birth date** : September, 22, 1983**Nationality** : Tunisian**Phone/ Whatsapp** : +216 58 58 30 68**Email** : zahra.kodia@isg.rnu.tn | zahra.kodia@gmail.com**Status** : Associate professor, ISG Tunis, University of Tunis**Research Structure** : Laboratory of Strategies for Modeling and ARTificial inTelligence (SMART-LAB)**Specialty**: Computer Science, Artificial Intelligence, Deep Learning**Web Sites**:[WebOfScience-Zahra-Kodia](#)[Scholar-Zahra-Kodia](#)[Scopus-Zahra-Kodia](#)[ResearchGate-Zahra-Kodia](#)[Orcid – Zahra Kodia](#)**Professional experience**

September 2024 Associate professor at ISG Tunis, University of Tunis*September 2015* Assistant professor at ISG Tunis, University of Tunis*September 2012* Lecturer at ESC Tunis, University of La Mannouba*2017 – 2020* Internship director at ISG Tunis, University of Tunis**Education and qualifications**

Decembre 2022 Habilitation in Management – Computer Science
Title: INSEG²-DIMA: INtelligent Sytems for financE, marketinG and manaGment DecIsion MAKing.
University of Tunis - Institut Supérieur de Gestion de Tunis

- December 2014** PhD in Computer Science
 Title: Multi-agent modeling and simulation of cognitive aspects in the stock market.
 University of Mannouba - National School of Computer Sciences of Tunis
- June 2008** Master's degree in Software Engineering and Decision Support - Artificial Intelligence
 Title: Multi-agent modeling and simulation of stock market-related socio-economic phenomena.
 University of Mannouba - National School of Computer Sciences of Tunis
- June 2006** Bachelor's degree in Computer Science Applied to Management.
 University of Tunis – ISG Tunis

Certifications & Training

- Microsoft Certification: MTA Database Administration Fundamentals, 2019
- Microsoft Certification: MTA Programming using Python, 2019
- Train-the-Trainer: Facilitating Face-to-Face Learning (FFF-O), 2021, IFC
- Training the trainers: Using the resources of the Imagine Academy platform, October 2016

Skills

- Data Understanding and preparation
- Data integration and BI process
- Business Process Management
- Data anonymization

Principle scientific publications

• Journal Papers

[J11] Zouaghia, Z., Kodia, Z., Ben Said, L. (2025). **A Novel Approach for Dynamic Portfolio Management Integrating K-Means Clustering, Mean-Variance Optimization, and Reinforcement Learning**. Knowledge and Information Systems.

(Accepted on 6 May 2025, IF = 2.5, SJR 2024, Q2 (computer science))

[J10] Zouaghia, Z., Kodia, Z. & Ben Said, L. (2025) **Smapf-hnna: a novel Stock Market Analysis and Prediction Framework using Hybrid Neural Network Architectures Across Major U.S. Indices**. International Journal of Data Science and Analytics (2025).
<https://doi.org/10.1007/s41060-025-00811-1>

Metric : IF 2023 = 3.4 ; SJR Quartile : Q2 (Computer Science)

[J9] Jihene Latrech, Zahra Kodia, Nadia Ben Azzouna. (2025) **CoD-MaF: toward a Context-Driven Collaborative Filtering using Contextual Biased Matrix Factorization**, International Journal of Data Science and Analytics, <https://doi.org/10.1007/s41060-025-00747-6>

Metric : IF 2023 = 3.4 ; SJR Quartile : Q2 (Computer Science)

[J8] Zakia Zouaghia, Zahra Kodia, Lamjed Ben Said. **Predicting the Stock Market Prices Using a Machine Learning-Based Framework During Crisis Periods**, Multimedia Tools and Applications, 2024 <https://doi.org/10.1007/s11042-024-20270>

Metric : IF 2022 = 3.6 ; SJR Quartile : Q2 (Computer Science)

[J7] Latrech, J., Kodia, Z. & Ben Azzouna, N. **Twit-CoFiD: a hybrid recommender system based on tweet sentiment analysis**. Soc. Netw. Anal. Min. **14**, 123 (2024). <https://doi.org/10.1007/s13278-024-01288-9>

Metric : IF 2022 = 2.8 ; SJR Quartile : Q2 (Computer Science)

[J6] Zakia Zouaghia, Zahra Kodia, Lamjed Ben Said. (2024) **A novel AutoCNN model for Stock Market Index Prediction**. Journal of Telecommunications and the Digital Economy (JTDE) DOI <https://doi.org/10.18080/jtde.v12n1.843>

Indexed by Scopus; SJR 2022 = 0.19 ; Quartile : Q4 (Computer Science)

[J5] Jihene Latrech, Zahra Kodia, Nadia Ben Azzouna. (2024) **CoDFi-DL: a hybrid recommender system combining enhanced collaborative and demographic filtering based on deep learning**. The Journal of Supercomputing, **80**, 1160–1182. <https://doi.org/10.1007/s11227-023-05519-2>

Metric : IF 2022 = 3.3 ; SJR Quartile : Q2 (Computer Science)

[J4] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2023) **Using MCDM and FaaS in Automating the Eligibility of Business Rules in the Decision-Making Process**. International Arab Journal of Information Technology. **20**(2), March, 2023. <https://doi.org/10.34028/iajit/20/2/9>

Metric : IF 2022 = 1.2 ; SJR Quartile : Q3 (Computer Science)

[J3] Zahra Fathalli, Zahra Kodia Aouina, Lamjed Ben Said. (2022) **Stock Market Prediction of NIFTY 50 Index Applying Machine Learning Techniques**. Applied Artificial Intelligence, **36**(1), 2111134, Taylor & Francis publisher, <https://doi.org/10.1080/08839514.2022.2111134>

Metric : IF 2022 = 2.8 ; SJR Quartile : Q3 (Computer Science)

[J2] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2022) **Enhancing Decision-making Consistency in Business process using a Rule-Based Approach: Case of BI Process**. Journal of Telecommunications and the Digital Economy, **10**(2), 44–61. <https://doi.org/10.18080/jtde.v10n2.539>

Indexed by Scopus ; SJR 2022 = 0.19 ; SJR Quartile : Q4 (Computer Science)

[J1] Zahra Kodia, Lamjed Ben Said et Khaled Ghédira. (2011) **Simulation comportementale à base d'agents de la dynamique du marché boursier : Modèle cognitif de l'investisseur**. Revue d'Intelligence Artificielle. RSTI – RIA **25**/2011 Simulation sociale orientée agent, volume **25**(1), pp 83-107, [doi:10.3166/ria.25.83-107](https://doi.org/10.3166/ria.25.83-107), Mars 2011

Indexed by Scopus ; SJR 2022= 0.299, SJR Quartile : Q3(Computer Science)

• International Conferences

[C21] Jihene Latrech, Zahra Kodia, Nadia Ben Azzouna. (2025). Machine Learning Based Collaborative Filtering Using Jensen-Shannon Divergence for Context-Driven Recommendations. In Proceedings of the 17th International Conference on Agents and Artificial Intelligence (ICAART 2025)- Volume 3, pages 419-426. DOI: 10.5220/0013146300003890

CORE 2023 : Rank B

[C20] Nadia Ben Haj Boubaker, Zahra Kodia, Nadia Yaakoubi Ayadi. (2024). Personalized E-Learning Knowledge Graph-based Recommender System using Ensemble Attention Networks. In Proceedings of the In 16th International Conference on Management of Digital EcoSystems (MEDES 2024) Nov 2024, Naples, Italy. [\(hal-04892534\)](#).

CORE 2023 : Rank C

[C19] Zouaghia, Z., Kodia, Z., Ben Said, L. (2024). A Machine Learning-Based Trading Strategy Integrating Technical Analysis and Multi-agent Simulation. In: Mathieu, P., De la Prieta, F. (eds) Advances in Practical Applications of Agents, Multi-Agent Systems, and Digital Twins: The PAAMS Collection. PAAMS 2024. Lecture Notes in Computer Science(), vol 15157. Springer, Cham. https://doi.org/10.1007/978-3-031-70415-4_26

CORE 2021 : Rank B / CORE 2023 : Requested B

[C18] Jihene Latrech, Zahra Kodia, Nadia Ben Azzouna. (2024). **Context-based Collaborative Filtering: K-Means Clustering and Contextual Matrix Factorization.**, 10th International Conference on Control, Decision and Information, CODIT IEEE, Valletta, Malta

CORE 2023 : Rank C

[C17] Zakia Zoughia, Zahra Kodia, Lamjed Ben Said. (2024). **Pred-IFDSS: An Intelligent Financial Decision Support System Based On Machine Learning Models.**, 10th International Conference on Control, Decision and Information, CODIT IEEE, Valletta, Malta

CORE 2023 : Rank C

[C16] Zouaghia, Z., Kodia, Z., Ben Said, L. (2024). **A Collective Intelligence to Predict Stock Market Indices Applying an Optimized Hybrid Ensemble Learning Model.** In: Nguyen, N.T., et al. Computational Collective Intelligence. ICCCI 2024. Lecture Notes in Computer Science(), vol 14810. Springer, Cham. https://doi.org/10.1007/978-3-031-70816-9_6

CORE 2023 : Rank B

[C15] Wiem Ben Ghazzi, Zahra Kodia and Nadia Ben Azzouna, "Fatigue Detection for the Elderly Using Machine Learning Techniques," 2024 10th International Conference on Control, Decision and Information Technologies (CoDIT), Vallette, Malta, 2024, pp. 2055-2060, doi: 10.1109/CoDIT62066.2024.10708516.

CORE 2023 : Rank C

[C14] Zakia Zouaghia, Zahra Kodia Aouina, Lamjed Ben Said. (2023) **Stock Movement Prediction Based On Technical Indicators Applying Hybrid Machine Learning Models**, 2023 International Symposium on Networks, Computers and Communications (ISNCC), Doha, Qatar, pp. 1- 4, <https://doi.org/10.1109/ISNCC58260.2023.10323971>

CORE 2023 : Rank C

[C13] Zakia Zouaghia, Zahra Kodia Aouina, Lamjed Ben Said. (2023) **Hybrid Machine Learning Model for Predicting NASDAQ Composite Index**. 2023 International Symposium on Networks, Computers and Communications (ISNCC), Doha, Qatar, pp. 1-6, <https://doi.org/10.1109/ISNCC58260.2023.10323903>

CORE 2023 : Rank C

[C12] Wiem BenGhozzi, Abir Chaabani, Zahra Kodia, Lamjed Ben Said. (2023) **DeepCNN-DTI: A Deep Learning Model for Detecting Drug-Target Interactions.**, 9th International Conference on Control, Decision and Information, CODIT IEEE, Rome, Italy, 2023, pp. 1677-1682, <https://doi.org/10.1109/CoDIT58514.2023.10284177>

CORE 2023 : Rank C

[C11] Safa Selmene, Zahra Kodia. (2020) **Recommender System Based on User's Tweets Sentiment Analysis**. In 2020 The 4th International Conference on E-commerce, E-Business and E-Government ICEEG (pp. 96-102). <https://doi.org/10.1145/3409929.3414744>

Indexed by Scopus, Compendex, ACM and DBLP

[C10] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2017) **MC-DMN: Meeting MCDM with DMN Involving Multi-criteria Decision-Making in Business Process**. The 17th International Conference on Computational Science and Its Applications. ICCSA'17, (pp.3-16). Springer, Cham. https://doi.org/10.1007/978-3-319-62407-5_1

CORE 2023 : Rank C

[C9] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2017) **Multi-Agent BPMN Decision Footprint**. In: Jezic, G., Kusek, M., Chen-Burger, YH., Howlett, R., Jain, L. (eds) Agent and Multi-Agent Systems: Technology and Applications. KES-AMSTA 2017. Smart Innovation, Systems and Technologies, vol 74. Springer, Cham. https://doi.org/10.1007/978-3-319-59394-4_23

CORE 2023 : Rank C

[C8] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2016) **Decision-making harmonization in business process: Using NoSQL databases for decision rules modelling and serialization**. In the proceeding of 4th International Conference on Control Engineering & Information Technology (CEIT) December 2016. IEEE, <https://doi.org/10.1109/CEIT.2016.7929078>

Indexed by IEEE Explore

[C7] Riadh Ghlala, Zahra Kodia Aouina, Lamjed Ben Said. (2016) **BPMN Decision Footprint: Towards Decision Harmony Along BI Process.**: In the proceeding of ICIST 2016 Information and Software Technologies. Communications in

Computer and Information Science, vol 639. Springer, pages 269-284, 2016, Cham.

https://doi.org/10.1007/978-3-319-46254-7_22

Indexed by DBLP and ACM

[C6] Zahra Kodia, Lamjed Ben Said et Khaled Ghédira, (2010) **Stylized facts study through a multi-agent based simulation of an artificial stock market.**, In: Li Calzi, M., Milone, L., Pellizzari, P. (eds) Progress in Artificial Economics. Lecture Notes in Economics and Mathematical Systems, vol 645. pages 27-38, Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-13947-5_3

Indexed by DBLP and Springer

[C5] **A Study of Stock Market Trading Behavior and Social Interactions through a Multi Agent Based Simulation.** Zahra Kodia, Lamjed Ben Said et Khaled Ghédira. In: Jędrzejowicz, P., Nguyen, N.T., Howlet, R.J., Jain, L.C. (eds) Agent and Multi-Agent Systems: Technologies and Applications. KES-AMSTA 2010. Lecture Notes in Computer Science (2010), vol 6071. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-13541-5_31

CORE 2023 : Rank C

[C4] **A multi-agent based pricing: a virtual stock market simulation.** Zahra Kodia, Lamjed Ben Said et Khaled Ghédira, 8^{ème} ENIM IFAC Conférence Internationale de Modélisation et Simulation (MOSIM'2010), Mai 2010. Hammamet, Tunisia.

[C3] **Towards a new cognitive modeling approach for multi-agent based simulation of stock market dynamics,** (short paper), Zahra Kodia, Lamjed Ben Said et Khaled Ghédira, *Proc. of 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2010)*, 2010. pp. 1565-1566, Toronto Canada.

CORE 2023 : Rank A*

[C2] **SiSMar : Social Multi-agent Based Simulation of stock market.** (Short paper), Zahra Kodia, Lamjed Ben Said et Khaled Ghédira, *Proc. of 8th Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2009)*, Decker, Sichman, Sierra and Castelfranchi (eds.), May, 10–15, 2009, Budapest, Hungary, pp. 1345, 1346.

CORE 2023 : Rank A*

[C1] **Multi-agent Simulation of Investor Cognitive Behavior in Stock Market.** Zahra kodia et Lamjed Ben Said, Mars 2009, In *7th International Conference on Practical Applications of Agents and Multi-Agent Systems (PAAMS 2009)* (pp. 90-99). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-00487-2_10.

CORE 2021 : Rank B / CORE 2023 : Requested B

• National Conferences

[CN1] Jihene Latrech, Zahra Kodia, Nadia Ben Azzouna. (2024) **Un système de recommandation hybride combinant le filtrage collaboratif et démographique basé sur l'apprentissage profond.**, Intelligence In Business And Industry Conference, 2024, Universite De Tunis, Tunis, Tunisia

[CN2] Wiem Ben Ghazzi, Zahra Kodia, Nadia Ben Azzouna. (2024) **Real-Time Fatigue Monitoring.**, Intelligence in Business and Industry conference, Février 2024, Université de Tunis, Tunis, Tunisia

[CN3] Zakia Zouaghia, Zahra Kodia et Lamjed Ben Said. (2024) **Modèle hybride d'apprentissage automatique pour prédire l'indice boursier de NASDAQ Composite.**, Intelligence in Business and Industry conference, Février 2024, Université de Tunis, Tunis, Tunisia

• Chapter Book

[CB1] Lamjed Ben Said, Zahra Kodia et Khaled Ghédira. **Design Of Cognitive Investor Making Decision For An Artificial Stock Market Simulation: A Behavior-based Approach.** Said, SoftComputing in Capital Market: Research and Methods of Computational Finance for Measuring Risk of Financial Instruments, 2014, 41-56.

Thesis Supervising

1. **Thesis title:** Enhancing decision-making in BI business processes based on enterprise architecture framework
Candidate : Riadh Ghlala
2. **Thesis title:** Modeling and simulation of Artificial Stock Market dynamics including Prices' predictions through Deep Learning Techniques (1^{ère} Inscription en décembre 2020)
Candidate : Zahra Fathalli
3. **Thesis title:** Towards an explanation framework for personalized context-driven cooperative recommender system (1^{ère} Inscription en décembre 2021)
Candidate : Jihene Latrech
4. **Thesis title:** Modeling and Simulation Of Predictive Investor In Artificial Stock Market: P-SiSMar Model (1^{ère} Inscription en décembre 2021)
Candidate : Zakia Zouaghia
5. **Thesis title:** Healthcare monitoring and prediction using Machine Learning techniques (Thèse en cotutelle avec université de Paris 8 - 1^{ère} Inscription en décembre 2022)
Candidate : Wiem Ben Ghazzi
6. **Thesis title:** Privacy preserving recommender system for pervasive environment (1^{ère} Inscription en décembre 2022)
Candidate : Ibtissem Ben Ouhiba

Teaching Activities

- Module: Advances in Intelligent Methods and Applications - Course
Volume: 42H
Location: Institut Supérieur de Gestion de Tunis
- Module: Intelligent Decision Support Systems – Course
Volume: 21H
Location: Institut Supérieur de Gestion de Tunis

- Module: Human Computer Interaction - Course
Volume: 42H
Location: Institut Supérieur de Gestion de Tunis
- Module: Enterprise Business Intelligence - Course
Volume: 42H
Location: Institut Supérieur de Gestion de Tunis
- Module: Data Vizualization - Course
Volume: 42H
Location: Institut Supérieur de Gestion de Tunis
- Module: Recommandation System - Course
Volume: 21H
Location: Institut Supérieur de Gestion de Tunis
- Module: Evolved Language and BI - Course
Volume: 21H
Location: Institut Supérieur de Gestion de Tunis
- Module : Object Oriented Programming - Course ; TD ; TP
Volume: 21H
Location: Ecole Supérieure de Commerce of Tunis
- Module: Advanced Object-Oriented Programming - Course; TD; TP
Volume: 21H
Location: Ecole Supérieure de Commerce of Tunis
- Module: Human Machine Interface - Integrated course
Volume: 21H
Location: Ecole Supérieure de Commerce of Tunis
- Module: Mathematical Logic - TD
Volume: 21H
Location: Ecole Supérieure de Commerce of Tunis

Participation in conferences and scientific meetings

- Session Chair (Session 1: Business) at the IBI'24 International Conference, University of Tunis (Intelligence In Business And Industry), February 2024, Gammarth, Tunisia
- Member of the program committee of the international conference IBI'24, University of Tunis (Intelligence In Business And Industry), February 2024, Gammarth, Tunisia
- Session Chair (Business Informatics) during the third edition of the ISGT-ESSECT-TBS doctoral days at the University of Tunis, TBS, January 2024

- Participation in the first and second editions of the ISGT-ESSECT-TBS doctoral days in March 2020, December 2021, University of Tunis

Linguistic skills

Arabic mother tongue

Fluent French

Fluent English