

Curriculum Vitae

Sonda Ammar

Contact Information

Institut Supérieur d'Informatique et de Multimédia de Sfax, SM@RTS Lab

B.P. 3018, Sfax, Tunisia

Phone: +216 58 41 42 44

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Born: August 9, 1986, Sfax

Married, 2 children

Current Position: Associate Professor in Computer Science

Academic Background

2023

Habilitation in Computer Science

Thesis: Contributions to Decision Support in Uncertain Contexts

Defended: December 2, 2023, École Nationale d'Ingénieurs de Sfax

Jury:

- Yassine Ben Ayed, Professor, ISIMS, President
- Slim Kanoun, Professor, ENIS, Rapporteur
- Walid Barhoumi, Professor, ENICarthage, Rapporteur
- Dorra Sellami, Professor, ENIS, Examiner
- Mohamed Hammemi, Professor, FSS, Examiner

2010–2014

Ph.D. in Computer Science (with High Honors)

Thesis: Possibilistic Analysis and Processing of Ultrasonic Signals for Assisting Visually Impaired Individuals

Defended: March 4, 2014, École Nationale d'Ingénieurs de Sfax

Jury:

- Faiez Gargouri, Professor, ISIMS, President
- Basel Solaiman, Professor, Télécom Bretagne, Rapporteur
- Ikram Amous, Associate Professor, ENET'Com, Rapporteur
- Mondher Frikha, Associate Professor, ENET'Com, Examiner
- Dorra Sellami Masmoudi, Professor, ENIS, Thesis Director

2009–2010

Master's in STIM (Computer Science, Multimedia Information Processing Systems)

Specialization: Computer Engineering

Institution: École Doctorale "Sciences Physiques et Mathématiques pour Ingénieur," University of Rouen

Supervisors: Yousri Kessentini, Bassem Besbes

2005–2009

Bachelor's in Computer Science and Multimedia (Honors)

Institution: Institut Supérieur d'Informatique et de Multimédia de Sfax

Final Project: Conducted at LITIS Laboratory, University of Rouen

2005

Baccalaureate in Mathematics (Honors)

Institution: Lycée Majida Boulila, Sfax

Professional Experience

Since 2025

Associate Professor in Computer Science

Institut Supérieur d'Informatique et de Multimédia de Sfax (ISIMS)

Since 2020

Founder of Startup "SATech"

Label: Startup Act, awarded July 2020

2018–2025

Assistant Professor in Computer Science

École Nationale d'Électronique et des Télécommunications de Sfax (ENET'Com)

2014–2018

Assistant Lecturer in Computer Science

Institut Supérieur de Gestion de Gabès (ISGG)

2011–2014

Contractual Assistant Lecturer

Institut Supérieur d'Informatique et de Multimédia de Sfax (ISIMS)

Research Activities

Research Interests

Pattern Recognition, Machine Learning, Computer Vision, Data and Information Quality, Analysis and Modeling of Imperfect Information, Information Fusion, Unsupervised Learning, Small Data, Uncertainty Theories, Feature Selection

Application Domains

Staircase Nature Recognition, Biometric Image Quality Assessment, Biometric Identification, Mobility Assistance Tools for Visually Impaired Individuals

Research Valorization

1. National Patent – INNORPI

Title: Al Mourafek Device for Semantic Analysis of Surrounding Scenes and Automated Locomotion

Filed: November 14, 2016

Issued: June 7, 2018

Expires: November 14, 2036

Contributors: Sonda Ammar Bouhamed, Imene Khanfir

2. Labeled Startup: Smart Aid Technologies (SATech)

Founders: Sonda Ammar Bouh “‘amed, Imene Khanfir

Creation Date: July 2020

Label: Startup Act, awarded August 5, 2020

International Research Collaborations

- 2020: Collaboration with Ronald R. Yager, Machine Intelligence Institute, Iona College, USA (1 publication)
- Since 2018: Collaboration with Eloi Bossé, McMaster University, Canada (5 publications)
- Since 2017: Collaboration with Olfa Kanoun, Thesis of Mouna Medhioub (6 publications)
- Since 2015: Collaboration with Basel Solaiman, IMT Atlantique-Brest, France (11 publications)
- 2013: Collaboration with Issam Rebai, Sylvie Kerouedan, Michel Jezequel, IMT Atlantique-Brest, France, for a Smart Electronic White Cane Prototype

Funded Research Projects (Post-Assistant Professor Appointment)

1. Young Researchers Encouragement Program (PEJC)

Title: Intelligent Platform for Combating Authentication Fraud

Contributors: Sonda Ammar Bouhamed, Yousri Kessentini, Mouna Medhioub

Funding: Ministry of Higher Education and Scientific Research, Tunisia

Period: November 2023 – October 2025

2. Federated Research Program (PRF)

Title: Multimodal Biometric Platform for Counter-Terrorism (PBMLT)

Contributors: CBS Research Center, four research structures (GEOGLOB, CEM-Lab, REGIM, SAGE), and SME Procan

Funding: Ministry of Higher Education and Scientific Research, Tunisia

Period: December 2016 – November 2019

3. Project Funded by Amira Noura University, Saudi Arabia

Title: Automatic Fingerprint Authenticity Verification for Secure Biometric Identification

Contributors (ENET'Com-Sfax, Tunisia): Sonda Ammar Bouhamed, Mouna Medhioub

Contributors (Taibah University, Yanbu, Saudi Arabia): Nesrine Masmoudi

Contributors (Amira Noura University, Riyadh, Saudi Arabia): Manel Ayadi

Funding: Amira Noura University, Saudi Arabia

Status: Submitted, under evaluation

Funded Research Projects (Pre-Assistant Professor Appointment)

1. R&D Project with Novel-Ti

Title: Navigation Aid System (NA_{system})

Contributors(ENIS–Sfax, Tunisia) : Sonda Ammar Bouhamed, Imene Khanfir Kallel, Marwa Chakroun, Mouna Medhioub

Contributors(Novel – Ti) : Zied Loukil

Funding : CEM – Lab, ENIS

Period : 2016~2017 R&D Project with IMT Atlantique-Brest

Title : Development of an Electronic White Cane Prototype

Contributors(ENIS–Sfax, Tunisia) : Sonda Ammar Bouhamed, Jihene Frikha Elleuch, Imene Khanfir Kallel

Contributors(IMT Atlantique – Brest, France) : Issam Rebai, Sylvie Kerouedan, Michel Jezequel

Period : February 2013~June 2013

Academic and Scientific Events (Post-Assistant Professor Appointment)

Academic Events

2. Forum Enet'Com Student-Enterprise (FEEE v8.0): "ENET'Com Still Innovates," November 18, 2023, Marassim Space, Sfax, Tunisia
- Judge, GEEK CHALLENGE v4.0: Microsoft Tech Club FSEG, April 29–30, 2023, FSEGS
- Judge, INNOV'Projects V2.0: PAQ-DGSE ProMISE, April 14, 2023, ENET'Com, Sfax, Tunisia
- Organizing Committee Member, FEEE v7.0: "Excellence Our Vision," November 19, 2022, ENET'Com, Sfax, Tunisia

- Judge, From Innovation to Startup: PAQ-DGSE ProMISE, December 1, 2021, ENET'Com, Sfax, Tunisia
- Organizing Committee Member, IDSD-Day'20: "Data Engineering & Decision Systems for Industry," May 7, 2020, ENET'Com, Sfax, Tunisia

Scientific Events

- Workshop IA² (Autumn Institute in AI): "AI and Management of Imperfect and Heterogeneous Information," October 30 – November 3, 2023, Le Lazaret, Sète, France (Online)
Link: IA² – Institut d'Automne en Intelligence Artificielle
- Seminar, IEEE IAS Tunisia Annual Meeting 3.0: "Introduction to Computer Vision," June 2, 2023, Hotel Orient Palace
- Webinar, The Future Vision of Intelligent Transportation: November 23, 2022 (Online)
Link: LinkedIn Event
- Deep Learning INDABA Workshop: August 21–26, 2022, Sup'Com, Tunis, Tunisia
Link: Deep Learning Indaba 2022
- Deep Learning INDABAX-Sfax Workshop: June 29, 2019, Maison de Culture de Sakiet-Ezzit, Sfax, Tunisia
Link: INDABAX-Sfax

Scientific Responsibilities

Special Session Organization

- 5th International Conference on Advanced Technologies for Signal and Image Processing (ATSIP'2020), Sfax, Tunisia
Topic: Data and Information Quality
Link: ATSIP 2020 Special Sessions

Program Committee Membership (Post-Assistant Professor)

- 42nd IBIMA Conference: November 22–23, 2023, Seville, Spain
Link: IBIMA
- 22nd International Conference on Cyberworlds (CW'2023): October 3–5, 2023, Sousse, Tunisia
Link: CW2023

Program Committee Membership (Pre-Assistant Professor)

- 12th International Multi-Conference on Systems, Signals & Devices (SSD'2015), Mahdia, Tunisia
Link: SSD15
- 1st International Image Processing, Applications and Systems Conference (IPAS'2014), Hammamet, Tunisia

Reviewing Activities

- Journals: *Pattern Recognition (PR)*, *Information Sciences (INS)*, *Circuits, Systems and Signal Processing (CSSP)*
- Conferences: *International Cyberworlds Conference (CW)*, *IBIMA*, *IEEE ITSC*, *SSD*

Scientific Meetings

- 17th ACIIDS'25: 23-25 April 2025, Kitakyushu, Japan
Link: ACIIDS 2025
- 15th ICCCT'23: September 27–29, 2023, Budapest, Hungary
Link: ICCCI 2023

- 27th KES'23: June 14–16, 2023, Athens, Greece
Link: KES 2023
- 5th ATSIP'20: Sfax, Tunisia
Link: ATSIP 2020
- 14th SSD'2017: March 28–31, 2017, Marrakech, Morocco
Link: SSD 2017
- 1st ATSIP'14: March 14–19, 2014, Sousse, Tunisia
Link: ATSIP 2014
- CEIT'14: March 22–25, 2014, Monastir, Tunisia
Link: CEIT 2014
- 36th TSP 2013: July 2–4, 2013, Rome, Italy
Link: TSP 2013
- ICVES 2012: July 24–27, 2012, Istanbul, Turkey
Link: ICVES 2012

Supervision Activities

Postdoctoral Co-Supervision

- Mouna Medhioub (Since 2023): Biometrics, Segmentation, Identification, and Data Quality Assessment Using Machine Learning and Deep Learning
Publications: 2 conference papers, 1 journal paper

Doctoral Co-Supervision

- Mouna Medhioub (2017–2021)
Thesis: Integration of Possibilistic Approaches for Obstacle Detection and Recognition for Embedded Systems Based on Depth Sensors
Defended: December 30, 2021
Supervisors: Nabil Derbel, Sonda Ammar, Imene Khanfir
Collaboration: Olfa Kanoun, Technische Universität Chemnitz, Germany
Publications: 3 conference papers, 1 journal paper
- Marwa Chakroun (2017–2021)
Thesis: Scene Perception Using a Multi-Sensor System for Navigation in Structured Indoor Environments
Defended: December 6, 2021
Supervisors: Basel Solaiman, Houda Derbel, Sonda Ammar, Imene Khanfir
Publications: 3 conference papers, 1 journal paper, 1 book chapter

Master's Research Supervision

- Mariem Regaieg: Exploration, Analysis, and Cleaning of Massive Data, ENET'Com, CRNS, Defended December 2024.
- Amina Kchaou: Evidential Analysis and Evaluation of Biometric Data Quality, ENET'Com, Defended January 2021
Publications: 1 journal paper
- Hatem Dardouri: Characterization of Information Reliability from Multiple Sources, ISGG, Defended December 2018
Publications: 1 conference paper
- Mouna Medhioub: Stair Recognition in Navigation Aid System, ENIS, Defended December 2016
- Marwa Chakroun: Scene Analysis in NA_System, ENIS, Defended December 2016

- Amal Charfi: Evaluation of Similarity Measures for Decision Trees in a Possibilistic Framework, ISIMS, Defended October 2014
- Mariem Chaaben: Study and Comparison of Possibility Distribution Estimation Approaches in Ambiguous Contexts, ISIMS, Defended April 2014
Publications: 1 conference paper
- Wafa Fikha Sahnoun: Contribution to Obstacle Description Using Ultrasonic Sensors, ISIMS, Defended November 2013
Publications: 1 conference paper

Professional Master's Supervision

- Khawla Dahech: Workflow Management for HR Service Requests, ENET'Com, CliniSys, Defended July 2023
- Youssef Kaffel: RDF Validation Tool, ENET'Com, Freedom Of Dev, Defended June 2023
- Omar Lajel: Design and Hosting of an S-Commerce Platform for GreenGreen Startup, ISGG, Defended July 2018
- Marwa Mhaddheb, Jilani Rinchi: Scene Acquisition and Synchronization for Electronic White Cane, ISBS, Defended July 2014
- Sabra Chouaibi, Nahed Missawi: Design of Bluetooth Earpiece Communication for Electronic White Cane, ISBS, Defended July 2014
- Imene Abbadi, Khaoula Boukouba: Spatial and Temporal Synchronization of Profile Signals Using an Accelerometer, ISBS, Defended July 2014
- Khoulood Ben Amor, Chourouk Ben Amor: Acceptability Study of an Electronic White Cane, ISBS, Defended July 2013
- Imene Dziri, Afef Yousfi: Design of Optical Acquisition Device for Electronic White Cane, ISBS, Defended July 2012
- Bassem Chrif, Mouna Barbar: Design of Ultrasonic Acquisition and Audio Feedback for Electronic White Cane, ISBS, Defended July 2012

Final Year Project Supervision (Selection)

- Mohamed Amine Ghamgui: Real-Time Action Recognition, Anavid Services Tunisia
- Hiba Bettaieb: Online Platform for Highlighting Data from Institut des Régions Arides, Institut des Régions Arides
- Hatem Slimani: Maintenance and Analysis Management Application, lynx-erp
- Hatem Hellal: AI-Based Weld Imperfection Detection System, Falcon Inspection & Services
- Chadi Hlaou: Code Library, Numeryx
- Amira Jebeli: Integration of Hyva in Magento 2 E-Commerce and Comparative Study, Decade
- Emna Moalla: Deep Learning-Based Data Quality Evaluation, CRNS
- Eya Issaoui: Web Application and QA Pipeline Implementation, Altersis Performance
- Allouche Mariem: E-Reputation, Z Consulting
- Ben Yamna Mounib: IRSN: EMMA Redesign, Scalian DS-France
- Arjoun Ghofrane: Web/Mobile Reservation Management Application, Digital Group Performance

Summer Internship Supervision

- Rihem Ayadi: Detection System for Forged Fingerprint Images, CRNS, July 5 – August 20, 2023
- Tlili Aymen: Depth Estimation of Maritime Vessels Using Transfer Learning, CRNS, August 1 – September 15, 2022

Publications

Impact Factor (IF) from Journal Citation Reports (JCR): <https://jcr.clarivate.com/>
SJR and Quartile from SCImago: <https://www.scimagojr.com/>

International Peer-Reviewed Journal Articles

1. S.A. Bouhamed, "Exploring possibilistic fingerprint image quality analysis: a soft computing approach for biometric database management." *Int. J. Mach. Learn. & Cyber.* 2025, DOI: 10.1007/s13042-025-02587-z
Q1; SJR: 0.99, IF: 3.6
2. S.A. Bouhamed, "Possibilistic modeling for fingerprint image quality assessment in Automatic Identification Systems." *Applied Soft Computing*, Vol. 171, 2025, DOI: 10.1016/j.asoc.2025.112790
Q1; SJR: 1.84, IF: 7.2
3. M. Medhioub, S. A. Bouhamed, I. K. Kallel, N. Derbel, O. Kanoun, "Optimal Feature Subset Deduction Based on Possibilistic Feature Quality Classification and Feature Complementarity," *Expert Systems with Applications (ESWA)*, 2024, DOI: 10.1016/j.eswa.2024.123353
Q1; SJR: 1.37, IF: 8.5
4. S. A. Bouhamed, I. K. Kallel, É. Bossé, B. Solaiman, "Two No-Reference Image Quality Assessment Methods Based on Possibilistic Choquet Integral and Entropy," *Expert Systems with Applications (ESWA)*, Vol. 224, 2023, DOI: 10.1016/j.eswa.2023.119926
Q1; SJR: 1.37, IF: 8.5
5. A. Kchaou, S. A. Bouhamed, "Two Image Quality Assessment Methods Based on Evidential Modeling and Uncertainty," *International Journal of Computers and Applications (IJCA)*, 2023, DOI: 10.1080/1206212X.2022.2162671
Q3; SJR: 0.27
6. N. Achich, F. Ghorbel, S. A. Bouhamed, et al., "An Evidence Theory-Based Approach to Handling Conflicting Temporal Data in OWL 2," *New Generation Computing (NGC)*, 2022, DOI: 10.1007/s00354-022-00187-x
Q3; SJR: 0.32, IF: 2.6
7. M. Chakroun, S. A. Bouhamed, I. K. Kallel, B. Solaiman, H. Derbel, "Feature Selection Based on Discriminative Power Under Uncertainty for Computer Vision Applications," *Electronic Letters on Computer Vision and Image Analysis (ELCVIA)*, 2022, DOI: 10.5565/rev/elcvia.1361
Q4; SJR: 0.22
8. M. Medhioub, I. K. Kallel, S. A. Bouhamed, N. Derbel, B. Solaiman, O. Kanoun, "Electronic Embedded System for Stair Recognition Based on Possibilistic Modeling of Ultrasonic Signal," *IEEE Sensors Journal*, 2021, DOI: 10.1109/JSEN.2020.3035834
Q1; SJR: 0.99, IF: 4.325
9. A. Charfi, S. A. Bouhamed, É. Bossé, I. K. Kallel, W. Bouchaala, B. Solaiman, N. Derbel, "Possibilistic Similarity Measures for Data Science and Machine Learning Applications," *IEEE Access*, 2020, DOI: 10.1109/ACCESS.2020.2979553
Q1; SJR: 1.56, IF: 3.367
10. S. A. Bouhamed, I. K. Kallel, R. R. Yager, E. Bossé, B. Solaiman, "An Intelligent Quality-Based Approach to Fusing Multi-Source Possibilistic Information," *Information Fusion (IF)*, 2020, DOI: 10.1016/j.inffus.2019.08.003
Q1; SJR: 2.238, IF: 12.975
11. S. A. Bouhamed, I. K. Kallel, B. Solaiman, D. S. Masmoudi, "Feature Selection in Possibilistic Modeling," *Pattern Recognition (PR)*, 2015, DOI: 10.1016/j.patcog.2015.03.015
Q1; SJR: 3.11, IF: 3.399

International Conference and Workshop Papers

1. S. A. Bouhamed, Y. Msaddak, "Image Quality Assessment for Facial Image Authenticity Verification (FIAV)," In: *Nguyen, N.T., et al. Recent Challenges in Intelligent Information and*

Database Systems. ACIIDS 2025. Communications in Computer and Information Science, vol 2494. Springer, Singapore. 2025, DOI: 10.1007/978-981-96-5884-8_15

Rank B, Core 2023

2. M. Medhioub, S. A. Bouhamed, I. Khanfir Kallel, N. Derbel, O. Kanoun, "Staircase Recognition Based on Possibilistic Feature Quality Assessment Method," *15th ICCCI'23*, 2023, DOI: 10.1007/978-3-031-41456-5_23
Rank B, Core 2023
3. M. Medhioub, S. A. Bouhamed, "Possibilistic Reasoning Based No-Reference Iris Image Quality Assessment," *27th KES'23*, 2023, DOI: 10.1016/j.procs.2023.10.381
Rank B, Core 2023
4. S. A. Bouhamed, H. Dardouri, I. Khanfir Kallel, E. Bossé, B. Solaiman, "Data and Information Quality Assessment in a Possibilistic Framework Based on the Choquet Integral," *5th ATSIP'20*, 2020, DOI: 10.1109/ATSIP49331.2020.9231627
5. S. Barhoumi, I. Khanfir Kallel, S. A. Bouhamed, H. Derbel, E. Bossé, "The Generation of Fuzzy Evidence Numbers for the Evaluation of Uncertainty Measures Behavior," *5th ATSIP'20*, 2020, DOI: 10.1109/ATSIP49331.2020.9231757
6. M. Chakroun, A. Charfi, S. A. Bouhamed, I. K. Kallel, B. Solaiman, H. Derbel, "Binary Hierarchical Classifier for Uncertain Numerical Attributes," *5th ATSIP'20*, 2020, DOI: 10.1109/ATSIP49331.2020.9231804
7. M. Chakroun, S. A. Bouhamed, I. Khanfir Kallel, "Ultrasonic Material Recognition for Safe Navigation," *34th IBIMA'19*, 2019, ISBN: 978-0-9998551-3-3
Rank B, Core 2018
8. M. Medhioub, S. A. Bouhamed, I. Khanfir Kallel, N. Derbel, O. Kanoun, "Investigation of Stair Detection and Recognition Based on Signal Processing of 1D-LiDAR Sensor," *32nd IBIMA'18*, 2018, ISBN: 978-0-9998551-1-9
Rank B, Core 2018
9. M. Medhioub, S. A. Bouhamed, I. K. Kallel, N. Derbel, O. Kanoun, "Laser Wave Modeling Based on Haralick's Features for Stair Detection and Recognition," *I_TEAM Workshop*, Sfax, Tunisia, 2018
10. S. A. Bouhamed, M. Chakroun, I. K. Kallel, H. Derbel, "Haralick Feature Selection for Material Rigidity Recognition Using Ultrasound Echo," *4th ATSIP'18*, 2018, DOI: 10.1109/ATSIP.2018.8364483
11. M. Medhioub, S. A. Bouhamed, I. K. Kallel, N. Derbel, B. Solaiman, O. Kanoun, "An Electronic Embedded System for Stair Recognition," *IEEE Workshop Sensorica*, 2017
12. S. A. Bouhamed, I. K. Kallel, "Merging Operator Selection in Possibility Theory," *13th SSD'17*, 2017, DOI: 10.1109/SSD.2017.8166958
13. I. K. Kallel, S. A. Bouhamed, B. Akrouit, "Clever Use of Meyer Wavelet for Iris Recognition," *ATSIP 2017*, DOI: 10.1109/ATSIP.2017.8075515
14. S. Ammar, I. Khanfir, D. Sellami, "A New Approach of Hybrid Decision Tree-Based Stair Recognition," *CEIT'14*, 2014, ISSN: 2356-5608
15. S. Ammar, W. Frikha, I. Khanfir, "Use of Ultrasound Echo to Specify Obstacles Hardness," *CEIT'14*, 2014
16. S. Ammar, I. Khanfir, D. Sellami, B. Solaiman, "Possibilistic Modeling of Ultrasonic Signal for Floor State Recognition," *ATSIP'14*, 2014, DOI: 10.1109/ATSIP.2014.6834581
17. M. Chaaben, I. Khanfir, S. Ammar, M. Belaaj, W. Bouchaala, "Possibility Distribution Estimation for a Small Sample Size of Data," *ATSIP'14*, 2014
18. S. Ammar, I. Khanfir, D. Sellami, "Staircase Detection and Recognition Using Ultrasonic Signal," *36th TSP 2013*, DOI: 10.1109/TSP.2013.6614021
19. S. Ammar, J. Frikha, I. Khanfir, D. Sellami, "New Electronic Cane for Visually Impaired People for Obstacle Detection and Recognition," *ICVES 2012*, DOI: 10.1109/ICVES.2012.6294266

20. B. Besbes, S. Ammar, Y. Kessentini, A. Rogozan, A. Benshair, "Evidential Combination of SVM Road Obstacle Classifiers in Visible and Far Infrared Images," *IV 2011*, DOI: 10.1109/IVS.2011.5940529
Rank B, ERA 2010

Book Chapters

1. M. Chakroun, S. A. Bouhamed, I. K. Kallel, B. Solaiman, H. Derbel, "Indoor Scene Simplification for Safe Navigation Using Saliency Map for the Benefit of Visually Impaired People," *Advanced Systems for Biomedical Applications*, Springer, 2021, DOI: 10.1007/978-3-030-71221-1_10

Published Book

1. I. K. Kallel, S. A. Bouhamed, "A New Approach of Hybrid Decision Tree-Based Floor State Recognition," *Editions Universitaires Européennes*, 2018, ISBN: 978-3-8416-7924-6