

# Norhène GARGOURI BEN AYED

## PhD HDR in Electrical Engineering

Associate Professor at the Digital Research Center of Sfax (CRNS)

Member of the SM@RT Laboratory (Signals, systems, aRtificial Intelligence and neTworkS)

Member of the Boussole Association for Scientific Research (ABORS)



✉ [norhene.gargouri@gmail.com](mailto:norhene.gargouri@gmail.com)

☎ +216 22 959 837

🌐 [www.crns.rnrt.tn/member/norhene.gargouri](http://www.crns.rnrt.tn/member/norhene.gargouri)

---

## PERSONAL INFORMATION

**Date of birth :** April 27, 1985

**Place of birth :** Sfax, Tunisia

**Gender :** Female

**Nationality :** Tunisian

**ID number :** 08785103

**Marital status :** Married

**Address :** Route El Ain KM 2, Sfax, Tunisia, 3051

## ACADEMIC BACKGROUND

- **University Habilitation (HDR)** 2014 – 2023  
National Engineering School of Sfax (ENIS), Tunisia  
Title: *Development of New Systems for Detection/Diagnosis Assistance in Breast Cancer Diagnosis.*  
Distinction: With high honors
- **PhD in Electrical Engineering** 2010 – 2013  
National Engineering School of Sfax (ENIS), Tunisia  
Title: *Preprocessing and Mass Detection in Mammographic Images Based on New GLLD Features.*  
Distinction: With high honors
- **Research Master's Degree in Electrical Engineering** 2008 – 2010  
National Engineering School of Sfax (ENIS), Tunisia  
Title: *Face Recognition Using Gabor Wavelet Networks.*  
Distinction: Very good
- **Master's Degree of Science and Technology in Instrumentation and Telecommunication** 2004 – 2008  
Faculty of Sciences of Sfax, Tunisia  
Project title: *Powering a Geolocation Unit with Solar Energy.*  
Distinction: Good
- **Baccalaureate in Experimental Sciences** 1997 – 2004  
Cit  El Habib Secondary School, Sfax, Tunisia

## SCIENTIFIC PUBLICATIONS

### Articles in Indexed Journals

1. Gargouri, N., Mokni, R., Damak, A., Sellami, D., & Abid, R. (2022). *An automatic breast computer-aided diagnosis scheme based on a weighted fusion of relevant features and a deep CNN classifier*. **IET Image Processing**, pp. 3394–3406.  
DOI: <https://doi.org/10.1049/ipr2.12572>. (Impact Factor: 2.3)
2. Gargouri, N., Zouari, M., Boukhris, R., Damak, A., Sellami, D., & Amous, S. (2021). *Computer-Assisted Diagnosis System for Abnormalities Classification in Digital Mammography Based on Multi-Threshold Modified Local Ternary Pattern (MtMLTP)*. **Journal of Biomimetics, Biomaterials and Biomedical Engineering**, 49, 75–89.  
DOI: <https://doi.org/10.4028/www.scientific.net/JBBBE.49.75>
3. Mokni, R., Gargouri, N., Damak, A., Sellami, D., Feki, W., & Mnif, Z. (2021). *An automatic computer-aided diagnosis system based on the multimodal fusion of breast cancer (mf-cad)*. **Biomedical Signal Processing and Control**, 69, 102914.  
DOI: <https://doi.org/10.1016/j.bspc.2021.102914>. (Impact Factor: 5.1)
4. Elleuch, J., Mehdi, M., Belaaaj, M., Gargouri, N., Sellami, D., & Damak, A. (2023). *Breast cancer anomaly detection based on the possibility theory with a clustering paradigm*. **Biomedical Signal Processing and Control**, 79, 104043.  
DOI: <https://doi.org/10.1016/j.bspc.2022.104043>. (Impact Factor: 5.1)
5. Mehdi, M., Kammoun, H. M., Gargouri, N., Sellami, D., & Damak, A. (2022). *Entropy-based traffic flow labeling for CNN-based traffic congestion prediction from meta-parameters*. **IEEE Access**, 10, 16123–16133.  
DOI: <https://ieeexplore.ieee.org/document/9703355>
6. Besbes, F., Gargouri, N., Damak, A., Feki, W., Sellami, D., Fourati, H., & Besbes, H. (2020). *A novel 3D-CAD for breast and lesion segmentation of axial breast DCE-MRI*. **Journal of Testing and Evaluation**, 49.  
DOI: <https://www.astm.org/jte20190674.html>. (Impact Factor: 1.2)
7. Mehdi, M. Z., Gargouri, N., Masmoudi, A. D., & Sellami, D. (2020). *A textural wavelet quantization approach for efficient breast microcalcifications detection*. **Multimedia Tools and Applications**, 79, 24911–24927.  
DOI: <https://doi.org/10.1007/s11042-020-09105-z>. (Impact Factor: 3.6)
8. Mehdi, M., Gargouri, N., Masmoudi, A. D., Sellami, D., & Abid, R. (2017). *An efficient microcalcifications detection based on dual spatial/spectral processing*. **Multimedia Tools and Applications**, 76, 13047–13065.  
DOI: <https://doi.org/10.1007/s11042-016-3703-9>. (Impact Factor: 3.6)
9. Masmoudi, A. D., Gargouri, N., Sellami, D., & Abid, R. (2015). *Robust mass classification based on a novel hybrid feature and fuzzy decision-level fusion in digital mammograms*. **Computer Methods and Programs in Biomedicine**, 122(2), 203–217.  
DOI: <https://doi.org/10.1016/j.cmpb.2015.08.003>. (Impact Factor: 4.6)

**Before Recruitment (Assistant Professor):**

10. Gargouri, N., Masmoudi, A. D., & Sellami, D. (2014). *A new automated CAD system for classification of malignant and benign lesions*. **Asian Journal of Information Technology**, 13, 477–484.  
DOI: <https://medwelljournals.com/abstract/?doi=ajit.2014.477.484>
11. Masmoudi, A., Gargouri, N., Sellami, D., & Abid, R. (2013). *LBPV descriptors-based automatic ACR/BIRADS classification approach*. **EURASIP Journal on Image and Video Processing**, 2013:19.  
DOI: <https://doi.org/10.1155/2012/765649>. (Impact Factor: 2.4)
12. Gargouri, N., Masmoudi, A. D., Sellami, D., & Abid, R. (2012). *A new GLLD operator for mass detection in digital mammograms*. **Journal of Biomedical Imaging**, vol. 2012, Article ID 765649.  
DOI: <https://doi.org/10.1155/2012/765649>

## Presentations at International Conferences

1. Boubakri, F., Gargouri, N., & Damak, A. (2022). *System for coronavirus classification based on a new textural descriptor*. **IEEE STA 2022**, pp. 355–360.  
DOI: <https://ieeexplore.ieee.org/document/10019167>
2. Mehdi, M. Z., Elleuch, J. F., Gargouri, N., Belaaaj, M., Sellami, D., & Damak, A. (2022). *Microcalcification detection using k-means based clustering within a possibility theory framework*. **CoDIT 2022**, vol. 1, pp. 431–436.  
DOI: <https://ieeexplore.ieee.org/document/9804006>
3. Mokni, R., Gargouri, N., Damak, A., Sellami, D., Feki, W., & Mnif, Z. (2019). *A novel CAD system for breast DCE-MRI based on textural analysis using several machine learning methods*. **Hybrid Intelligent Systems**, pp. 176–187.  
DOI: [https://link.springer.com/chapter/10.1007/978-3-030-49336-3\\_18](https://link.springer.com/chapter/10.1007/978-3-030-49336-3_18)
4. Besbes, F., Gargouri, N., Damak, A., & Sellami, D. (2018). *A novel automatic segmentation workflow of axial breast DCE-MRI*. **ICMV 2017**, vol. 10696, pp. 179–186.  
DOI: <https://doi.org/10.1117/12.2309698>
5. Mehdi, M. Z., Gargouri, N., Masmoudi, A. D., & Sellami, D. (2016). *An efficient technique for the extraction of microcalcification's severity features*. **IPAS**, pp. 1–6.

## PATENTS

- **Pulmonary Diseases Classification System based on Deep Learning Models**.  
Patent filed on July 11, 2024, Number: **TN 2024/0218**.

## COLLABORATION AND OUTREACH ACTIVITIES

- **2018–2019**: Coordinator of the research project selected under the *Young University Researchers Program (PJEC)* – 3<sup>rd</sup> edition: “*Development of an automatic multimodal fusion system for breast cancer diagnosis (CAD-Mix)*”.
- **2018–2021**: Member of the *PAQ-PAS “Scientific Pre-Startup and Incubation”* project, aimed at young graduates (engineers or master’s holders). Project coordinated by Dr. Wiem ABBES: “*IoT application based on a hardware platform and software for a telemedicine service*”.

- **Since November 2022:** Member of the research project selected under the *Young University Researchers Program (PJEC)* – 4<sup>th</sup> edition: “*Development of a thoracic image characterization system for COVID-19 diagnosis based on artificial intelligence (SDIA)*”.

As part of this latest project, we established a collaboration with the internal medicine department and the radiology center of the **CHU of Sfax** for medical imaging research projects.

## INTERNATIONAL SCIENTIFIC EVENTS CO-ORGANIZED

- **IEEE Conference "International Image Processing, Applications and Systems (IPAS)"**, Member of the organizing committee for the 2014, 2016, 2018, 2020, and 2022 editions.

This conference is organized in collaboration with:

- National Engineering School of Sfax (ENIS), Tunisia
- IFSTTAR (France)
- Institut Mines-Télécom, France

- **International Conference on Computational ONE HEALTH, May 8–10, 2025 in Sfax**, this event will bring together leading scientists in human, animal, plant, and environmental health. Member of the scientific committee.
- **International Conference on Computational Collective Intelligence (ICCCI 2023)**, Member of the program committee.

## NATIONAL SCIENTIFIC EVENTS CO-ORGANIZED

- Co-organization of two workshops on *Medical Image Processing (TIM'15 and TIM'17)* at the Digital Research Center of Sfax, on April 4, 2015, and April 19, 2017, respectively. Also participated in training during the TIM'15 seminar.
- Workshop "*Tools for Research Promotion*", at the National Engineering School of Sfax, April 13, 2016.
- Workshop "*Neuro-linguistic Programming and Soft Skills*", at the National Engineering School of Sfax, May 4, 2016.
- Workshop "*Focus on the Engineering Profession: Ethics and Skills Packages...*", at the National Engineering School of Sfax, July 19, 2018.
- Workshop "*International Accreditation ABET*", at the National Engineering School of Sfax, July 30, 2018.
- Workshop "*Soft Skills Plus Days*", at the Digital Research Center of Sfax, September 4–6, 2018.
- Workshop "*Image and Signal Analysis Days*", at the Digital Research Center of Sfax, November 27–28, 2018.
- Workshop "*Blockchain Technologies*", at the National Engineering School of Sfax, April 2, 2019.
- Workshop "*Coaching, Team Spirit and Conflict Management*", at the National Engineering School of Sfax, April 24, 2019.

- Workshop "*Awareness of Scientific and Clinical Research*", at the National Engineering School of Sfax, October 18, 2019.
- Training "*Research Project Management*" at the Digital Research Center of Sfax, November 12–13, 2019.
- Workshop "*New Medicine for Epilepsy*", at the Digital Research Center of Sfax, April 25, 2023.
- Training "*Innovative Doctor*" at the Digital Research Center of Sfax, sessions from 2019 to 2021.

## ADMINISTRATIVE ACTIVITIES

- Since September 2015: Member of the Scientific Council of the Digital Research Center of Sfax.
- 2016–2017: Member of the Technology Watch Cell at CRNS.
- Since 2024: Member of the Council of the CEM-Lab Laboratory at ENIS.

## SCIENTIFIC REVIEWING ACTIVITY

- Since 2014: Reviewer for the IEEE *International Image Processing, Applications, and Systems* (IPAS) conference.
- 2023: Reviewer for the *International Conference on Computational Collective Intelligence (ICCCI 2023)*.
- 2023: Reviewer for MDPI journals such as:
  - *Journal of Imaging* (Impact Factor: 3.2),
  - *Sensors* (Impact Factor: 3.9),
  - *International Journal of Environmental Research and Public Health* (Impact Factor: 4.6).
- 2025: Reviewer for the *International Conference on Computational ONE HEALTH*.