

## *Curriculum Vitae*

# Rim WALHA



### **PERSONAL INFORMATION**

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**Date and place of birth :** 03 / 08 / 1984 at Sfax, Tunisia

**Nationality :** Tunisian

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### **STUDIES AND GRADUATIONS**

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➤ **PhD degree in Computer Systems Engineering**

PhD under a joint supervision between *National Engineering School of Sfax (ReGIM-Lab, ENIS, Tunisia)* and *National Institute of Applied Sciences of Lyon (LIRIS-Lab, INSA, France)*

**Title :** Sparse Coding based Resolution Enhancement: Application to Textual Images.

**Mention :** Very Honorable

**Avril 2016**

➤ **Research master degree in computer science**

*National Engineering School of Sfax (ENIS), Tunisia*

**Speciality :** New Technologies of Dedicated Computing Systems (NTSID)

**Title :** Automatic Arabic Speech Recognition by analytical approach.

**Mention :** Very Good

**October 2010**

➤ **Engineering degree in computer science**

*National Engineering School of Sfax (ENIS), Tunisia*

**Speciality :** Intelligent Systems Engineering

**Title :** Design and implementation of a multi-size and multi-font printed Arabic text recognition system by morphological analysis.

**Mention :** Very Good

**June 2008**

➤ **Baccalauréat degree in mathematics**

*Mongi Slim school, Sfax, Tunisia*

**Mention** : Good

**June 2003**

**PEDAGOGICAL ACTIVITIES**

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- 2018–2022 : Assistant professor in Higher Institute of Computer Science and Multimedia of Sfax (ISIMS), University of Sfax, Tunisia.
- 2014–2018: Assistant in Higher Institute of Management (ISG), University of Gabes, Tunisia.
- 2011–2014 : Contractual assistant in Higher Institute of Computer Science and Multimedia of Sfax (ISIMS), University of Sfax, Tunisia.
- 2010–2011 : Contractual assistant in Higher Institute of Management (ISG), University of Gabes, Tunisia.

**Teaching of the following courses:**

- Course "Integrated development environment"
- Course "Development of applications on mobile platforms"
- Course "Analysis and compression of multimedia objects"
- Course "Audit and computer security"
- Course "Database"
- Course "Computer Security"
- Course "Web development I"
- Course "Computer security and data confidentiality"
- Course "Multimedia manipulation language"
- Course "Event programming"
- Course "Algorithms and data structures"
- Course "Business process reengineering"

**RESEARCH FIELD**

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- Artificial intelligence
- Machine learning
- Image analysis and processing
- Image restoration (super-resolution, denoising, deblurring)
- Pattern recognition
- Document analysis

## COLLABORATION ACTIVITIES

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- Participation in the project entitled "Reatinext: Real-time end-to-end Text Detection and Recognition in the Wild" which is part of the Tunisian-Indian joint project call and submitted with the Computer Vision and Pattern laboratory Recognition Unit (CVPR)-India.

Project start date: September 1, 2016

Project end date: August 31, 2019

## PUBLICATIONS

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- **Publications in international journals :**

1. R. Harizi, **R. Walha**, F. Drira, "Deep-learning based end-to-end system for text reading in the wild", in *Multimedia Tools and Applications (MTAP)*, 2022. DOI:10.1007/s11042-022-11998-x
2. R. Harizi, **R. Walha**, F. Drira, M. Zaied, "Convolutional Neural Network with Joint Stepwise Character/Word Modeling based System for Scene Text Recognition", in *Multimedia Tools and Applications (MTAP)*, pp 1-16, 2021. DOI:10.1007/s11042-021-10663-z
3. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, "Handling Noise in Textual Image Resolution Enhancement Using Online and Offline learned dictionaries", Submitted in *International Journal on Document Analysis and Recognition (IJ DAR)*, Volume 21, Number 1-2, pp 137-157, 2018. DOI:10.1007/s10032-017-0294-6
4. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, "Resolution Enhancement of Textual Images: a Survey of Single Image Based Methods", in *IET Image Processing Journal*, Volume 10, Issue 4, pp 325-337, 2016. DOI:10.1049/iet-ipr.2015.0334
5. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, "Resolution Enhancement of Textual Images via Multiple Coupled Dictionaries and Adaptive Sparse Representation Selection", in *International Journal on Document Analysis and Recognition (IJ DAR)*, Volume 18, Issue 1, pp 87-107, 2015. DOI:10.1007/s10032-014-0235-6

➤ **Publications in international conferences :**

1. A. Mallek, F. Drira, **R. Walha**, A. M. Alimi, and F. Lebourgeois, “Deep Learning with Sparse Prior: Application To Text Detection in the Wild”, Accepted in the 12th International Conference on Computer Vision Theory and Applications (VISAPP), Porto, Portugal, February 2017.
2. K. Guemri, F. Drira, **R. Walha**, A. M. Alimi, and F. Lebourgeois, “Edge Based Blind Single Image Deblurring with Sparse Priors”, Accepted in the 12th International Conference on Computer Vision Theory and Applications (VISAPP), Porto, Portugal, February 2017.
3. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, "Joint Denoising and Magnification of Noisy Low-Resolution Textual Images", in Proceedings of the 13th International Conference on Document Analysis and Recognition (ICDAR), pp 871- 875, Nancy, France, August 2015.
4. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “Sparse Coding with a Coupled Dictionary Learning Approach for Textual Image Super-Resolution”, in Proceedings of the 22nd International Conference on Pattern Recognition (ICPR), pp 4459-4464, August 2014, Stockholm, Sweden.
5. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “A Sparse Coding based Approach for the Resolution Enhancement and Restoration of Printed and Handwritten Textual Images”, in Proceedings of the 14th International Conference on Frontiers in Handwriting Recognition (ICFHR), pp 696-701, September 2014, Crete, Greece.
6. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “Histogram of Structure Tensors: Application to Pattern Clustering”, in Proceedings of the 22nd International Conference on Computer Graphics, Visualization and Computer Vision (WSCG), pp 345-352, Juin 2014, Plzen, Czech Republic.
7. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “Multiple Learned Dictionaries Based Clustered Sparse Coding for the Super-Resolution of Single Text Image”, in Proceedings of the 12th International Conference on Document Analysis and Recognition (ICDAR), pp 484-488, August 2013, Washington DC, USA.
8. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “Single Textual Image Super-Resolution Using Multiple Learned Dictionaries Based Sparse Coding”, in Proceedings of the 17th International Conference on Image Analysis and Processing (ICIAP), Part II, LNCS 8157, pp. 439-448, September 2013, Napoli, Italy.

9. **R. Walha**, F. Drira, F. Lebourgeois, C. Garcia, and A. M. Alimi, “Super-Resolution of Single Text Image by Sparse Representation”, in Proceedings of the Workshop on Document Analysis and Recognition (DAR), pp. 22-29, December 2012, IIT Bombay, India.
10. **R. Walha**, F. Drira, H. El-Abed, and A. M. Alimi, “On Developing an Automatic Speech Recognition System for Standard Arabic Language”, in Proceedings of the 3rd International Conference on Communications, Control and Signal Processing (ICCCSP), pp. 305-310, November 2011, Venice, Italy.
11. **R. Walha**, F. Drira, H. El-Abed, and A. M. Alimi, “Study of Acoustic Parameters and Models for Automatic Standard Arabic Speech Recognition”, in Proceedings of the 11th Tunisian Japanese Symposium on Science, Society and Technology (TJASSST), November 2011, Hammamet, Tunisia.

## **RESEARCH INTERNSHIPS**

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- From August 23 to September 30, 2013:
  - Research Laboratory: LIRIS, INSA Lyon
  - Location: INSA Lyon, France
- From April 15 to July 15, 2013:
  - Research Laboratory: LIRIS, INSA Lyon
  - Location: INSA Lyon, France
- From April 20 to August 15, 2012:
  - Research Laboratory: LIRIS, INSA Lyon
  - Location: INSA Lyon, France