MOHAMED ALI SOUIBGUI

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ABOUT

Experienced Computer Vision (CV) and Machine Learning (ML) researcher with a PhD from the Autonomous University of Barcelona (UAB). Currently serving as a Postdoctoral Researcher with the Vision and Language team at the Computer Vision Center (CVC), Barcelona, I bring a robust background in developing and deploying advanced machine learning algorithms. Previously I was a lead research scientist in Chordata Motion. I developed several machine-learning projects and published many novel research papers. I am passionate about algorithms and used to participate in coding competitions.

EDUCATION

Universitat Autònoma de Barcelona *Oct 2019- Dec 2022*
PhD degree in computer science Grade: Cum Laude
Topics: Computer Vision, Deep Learning, Vision and Language.

Université de Monastir *Sep 2015- Mar 2018*
Master's degree in computer science
Topics: Automatic Reasoning Systems, Machine Learning, AI.

Université de Monastir *Sep 2012- Jun 2015*
Bachelor's degree in computer science
Topics: Object Oriented Programming, Algorithms and Data Structures, Software Development, Etc.

EXPERIENCE

Post-doc Researcher, Computer Vision Center (CVC) *Feb 2024- Now*

- Work on safe and secure AI systems (Large Language Models, Multimodal Models).
- Developing explainable DocVQA systems.
- Developing DocVQA systems in private federated learning scenarios.

Lead AI Research Scientist/Engineer, Chordata Motion *May 2023- Feb 2024*

- Leading the machine learning team and the data-driven development of Chordata Motion.
- Developing intelligent 3D human motion capture systems with IMU sensors (design, implement and deploy the models on single board computers).
- Reducing the number of required sensors to capture 3D human motion from 15 to 6.
- Deploying models in constrained hardware and optimizing to achieve real-time performance.

Post-doc Researcher, Computer Vision Center (CVC) *Dec 2022- Jul 2023*

- Developing secure and safe AI systems within the European project ELSA.
- Preserving privacy for document intelligence systems that are based on large language models during training and inference, through federated learning and differential privacy.

Pre-doc Researcher, Computer Vision Center (CVC) *Oct 2019- Nov 2022*

- Responsible for the image processing part within the European project Decrypt.
- Designing, implementing and maintaining machine learning models for text recognition (OCR), object detection, image quality enhancement and image generation, etc.
- Publish and present the novel research work on top-ranked journals (PAMI, PR) and conferences (AAAI, WACV, ICPR)

Computer Vision Researcher, CRNS Sfax *Oct 2018- Aug 2019*

- Design and implement deep learning models for projects related to image quality enhancement and image generation.

Research Engineer Intern, Satoripop *Jan 2019- Apr 2019*

- Work within the R&D Team of Satoripop. Design and implement a deep learning model for automatic website code generation (HTML and CSS) from a handwritten sketch design image.

EXPERTISE

- **Artificial Intelligence / Deep Learning**: Artificial Neural Networks (**ANN**) / Convolutional Neural Networks (**CNN**) / Generative Models (**GANs, VAEs**) / **Transformers** / Recurrent Neural Networks (**RNN**) / Few-shot Learning / Continual Learning / Self-supervised Learning / Large Language Models (**LLM**) / Federated Learning / Explainable AI.
- **Computer Vision / Pattern Recognition**: **Object Detection / Classification, Retrieval** / Optical Character Recognition (**OCR**) / **Image Processing, Enhancement / Image Generation / Pose Estimation / 3D Human Motion Capturing / IMU Sensors**.

PROGRAMMING LANGUAGES / LIBRARIES

Python, Pytorch, Tensorflow, huggingface, Pandas, Numpy, OpenCV, scikit-learn, C++, Latex, etc.

SELECTED PUBLICATIONS

Note: this is a selected list, for the full list of publications, please check my google scholar.

- **Souibgui, M. A.**, & Kessentini, Y. (2020). *DE-GAN: A conditional generative adversarial network for document enhancement.* IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**).
- **Souibgui, M. A.**, Biswas, S., Mafla, A., Biten, A. F., Fornés, A., Kessentini, Y., Lladós, J, Gomez, L, & Karatzas, D. (2022). *Text-DIAE: Degradation Invariant Autoencoders for Text Recognition and Document Enhancement.* In 2023 AAAI Conference on Artificial Intelligence (**AAAI**).
- **Souibgui, M. A.**, Biswas, S., Jemni, S. K., Kessentini, Y., Fornés, A., Lladós, J, & Pal, U. (2022). *DocEnTr: An End-to-End Document Image Enhancement Transformer.* In 2022 26th International Conference on Pattern Recognition (**ICPR**).
- **Souibgui, M. A.**, Biten, A. F., Dey, S., Fornés, A., Kessentini, Y., Gomez, L., Karatzas, D. & Lladós, J (2022). *One-shot Compositional Data Generation for Low Resource Handwritten Text Recognition.* In IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**) (pp. 935-943).

LANGUAGES

- **English**: Excellent writing, Excellent speaking
- **French**: Good writing, Good speaking

- **Arabic**: Native language
- **Spanish**: Beginner

AWARDS

- **CERCA Pioneer Awards 2023** The awards recognise researchers from a CERCA center (Catalan Research Centers) who have just completed a doctoral thesis with clear market-oriented results.
- **Best poster award:** The prize was given by the Deep Learning Indaba 2023 organizing committee for the paper entitled: *CSSL-MHTR : Continual Self-Supervised Learning for Scalable Multi-script Handwritten Text Recognition.*
- **Best student paper award:** The prize was given by the ICPR 2020 organizing committee for the paper entitled: *A Few-shot Learning Approach for Historical Ciphered Manuscript Recognition*