

Yassine OUZAR

64-66 rue Abélard

59000 Lille

Tel : 07 51 10 36 00

E-mail : yassine.ouzar@univ-lille.fr



Education

2019-2023	Phd in Automatic, Computer Science, Signal/Image processing LCOMS Lab, University of Lorraine, Metz, France
2018-2019	Master in Embedded Systems and Data science Paris Saclay University, Orsay, France
2016-2018	Master in Embedded Systems Abdelhamid Ibn Badis University, Mostaganem, Algeria
2013-2016	Bachelor in Electronic Engineering Abdelhamid Ibn Badis University, Mostaganem, Algeria

Technical Skills

Data science and Machine learning (Numpy, Pandas, Matplotlib, SciPy, Sckit-Learn, Keras, Tensorflow, Pytorch)
Deep learning (Supervised/Unsupervised/Semi-supervised and Self-supervised Learning, CNN, RNN, GAN, AE, Transformer)
Computer vision - Signal/Image processing (Matlab, Python)
Physiological signals processing and Remote Photoplethysmography
Affective computing, Automatic, Robotic
Hardware and software design of embedded systems (UC, Arduino, Raspberry pi, FPGA)
Real time embedded systems and concurrent programming
Computer architecture (Motorola 6809/68000, MIPS, ARM) Analog and digital electronics
Operating Systems: Windows, Linux
Programming language: Python, C/C++/C#, Matlab, VHDL, Bash, HTML/CSS, JavaScript

Software:

Professional Experience

2023-2025	Postdoctoral researcher Centre de Recherche en Informatique, Signal et Automatique de Lille (CRISTAL), Université de Lille
2022-2023	Temporary teaching and researcher assistant Laboratoire de Conception, Optimisation et Modélisation des Systèmes, Université de Lorraine

Teaching assistant:

Centrale Lille, France

- Explainable AI (Python) (M2 MIAS)
- Uncertainty management (Python) (M2 MIAS)

University of Lorraine, Metz, France

- Machine learning (Python) (M1 E3A)
- Oriented Object Programming (C++) (M1 E3A)
- Web Development (HTML/CSS/JavaScript) (M1 E3A)
- Computer Network (M1 E3A)
- UNIX (M1 E3A)
- Internet of Things (M2 E3A)
- Graphical User Interface (C++/C#) (L3 E3A)
- Digital Electronics (L1 E3A)
- Algorithms and Programming (C) (L1 E3A)

Mentoring:

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| 2024 - 2025 | ▪ Master's Internship: Exploration of multimodal LLMs for the analysis and prediction of severe depression. |
| 2024 - 2025 | ▪ Master's Internship: Multimodal approach combining EEG and oculometry in the evaluation of post-traumatic stress disorder. |

- 2021 - 2022 ■ Master's Internship: Multimodal emotion recognition: approach based on contactless technologies.
- 2024 - 2025 ■ Third-year engineering student's project: A self-supervised, interpretable system for detecting prescription errors.
- 2022 - 2023 ■ Master's project – Data science: Python Toolbox for video-based pulse rate measurement using imaging photoplethysmography.
- 2022 - 2023 ■ Master's project – Data science: emotion recognition using eye tracking data.
- 2021 - 2022 ■ Master's project - Human machine systems engineering: non-contact heart rate variability measurement from facial video recordings.
- 2020 - 2021 ■ Master's project - Human machine systems engineering: non-contact pulse wave extraction based on deep learning.
- 2020 - 2021 ■ Master's project - Human machine systems engineering: non-contact pulse rate measurement by camera based on deep learning.

Publications:

- **OUZAR, Yassine**, AJMI, Faiza, BEN OTHMAN, Sarah, ROUSSELIERE, Chloé, DECAUDIN, Bertrand, ODOU, Pascal, and HAMMADI, Slim. Interpretable One-Class Classification Framework for Prescription Error Detection Using BERT Embeddings and Dimensionality Reduction. *Computers in Biology and Medicine*. **(Under review - minor revision)**
- **OUZAR, Yassine**, NINEUIL, Clémence, BOUTALE, Fouad, PIERSON, Emery, AMAD, Ali, and DAOUDI, Mohamed. Wearable-Derived Behavioral and Physiological Biomarkers for Classifying Unipolar and Bipolar Depression Severity. In: *IEEE International Conference on Automatic Face and Gesture Recognition, 2025*. **(submitted)**
- **OUZAR, Yassine**, DJELDJI, Djamaledine, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. X-iPPGNet: A novel one stage deep learning architecture based on depthwise separable convolutions for video-based pulse rate estimation. *Computers in Biology and Medicine*.
- **OUZAR, Yassine**, Lagha, Lynda, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. Multimodal stress state detection from facial videos using physiological signals and facial features. In: *Proceedings of the IEEE/CVF International Conference on Pattern Recognition*.
- **OUZAR, Yassine**, BOUSEFSAF, Frédéric, DJELDJI, Djamaledine, and MAAOUI, Choubeila. Video-based multimodal spontaneous emotion recognition using facial expressions and physiological signals, In: *Proceedings of the IEEE/CVF Computer Vision and Pattern Recognition*.
- BOUSEFSAF, Frédéric, DESQUINS, Théo, DJELDJI, Djamaledine, **OUZAR, Yassine**, MAAOUI, Choubeila, and PRUSKI, Alain. Estimation of Blood Pressure Waveform from Facial Video Using a Deep U-Shaped Network and the Wavelet Representation of Imaging Photoplethysmographic Signals, *Biomedical Signal Processing and Control*, 2021.
- **OUZAR, Yassine**, DJELDJI, Djamaledine, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. LCOMS Lab's approach to the Vision for Vitals (V4V) Challenge. In: *Proceedings of the IEEE/CVF International Conference on Computer Vision*. 2021. p. 2750-2754.
- BOUSEFSAF, Frédéric, DJELDJI, Djamaledine, **OUZAR, Yassine**, MAAOUI, Choubeila, and PRUSKI, Alain. iPPG 2 cPPG: Reconstructing contact from imaging photoplethysmographic signals using U-Net architectures. *Computers in Biology and Medicine*, 2021, vol. 138, p. 104860.
- BOUSEFSAF, Frédéric, DJELDJI, Djamaledine, **OUZAR, Yassine**, MAAOUI, Choubeila, and PRUSKI, Alain. Transformée en ondelettes et IA pour la reconstruction d'un signal PPG en contact à partir de sa version sans contact. In GRETSI'22, XXVIIIème Colloque Francophone de Traitement du Signal et des Images, Nancy, Nov. 2022.
- BOUSEFSAF, Frédéric, DESQUINS, Théo, DJELDJI, Djamaledine, **OUZAR, Yassine**, MAAOUI, Choubeila, and PRUSKI, Alain. Estimation of blood pressure waveform from

facial video using a deep U-shaped network and the wavelet representation of imaging photoplethysmographic signals, conférence Handicap 2022, 129–134, Paris, Juin 2022.

- **OUZAR, Yassine**, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. Mesure sans contact de la fréquence par caméra basée sur l'apprentissage profond. *Colloque Jeunes Chercheurs IFRATH*, 2021.
- **OUZAR, Yassine**, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. Reconnaissance multimodale des émotions spontanées par caméra basée sur les expressions faciales et les signaux physiologiques. In Journées de printemps de la SAGIP 2022, Bidart, May 2022.
- **OUZAR, Yassine**, BOUSEFSAF, Frédéric, and MAAOUI, Choubeila. Système bimodal pour la reconnaissance des émotions basé sur l'apprentissage profond. In 27e Journées STP du GdR MACS, Nantes, 2020.

Reviewer for the following journals:

- IEEE Journal of Biomedical and Health Informatics.
- IEEE Transactions on Mobile Computing.
- Sensors.

Reviewer for the following conferences:

- IEEE International Conference on Automatic Face and Gesture Recognition.
- International Conference on Computer Science and Application Engineering

Collaborations :

CHU Lille/
LiNCog /Inserm

CHU Lille

i-Virtual

- Identification of objective biomarkers for psychiatric disorders through multimodal analysis of physiological and behavioral data.
- Development of a clinical decision support system for detecting medication prescription errors.
- Knowledge and code transfer for the development and implementation of strategies and methods for contactless measurement of vital signs.

Referents

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| ▪ Pr. Choubeila MAAOUI
Full professor
Tel : 03 72 74 93 10
Email : choubeila.maaoui@univ-lorraine.fr | ▪ PhD. Frédéric BOUSEFSAF
Associate professor
Tel : 03 72 74 92 94
Email : frederic.bousefsaf@univ-lorraine.fr |
| ▪ Pr. Slim HAMMADI
Full professor
Tel : 03 20 33 54 47
Email : slim.hammadi@centralelille.fr | Pr. Mohamed DAOUDI
Full professor
Tel :
Email : mohamed.daoudi@univ-lille.fr |