KONTRAS KONSTANTINOS

PROFESSIONAL & RESEARCH EXPERIENCE

PhD Researcher, **KU Leuven Stadius**, Leuven, Belgium 2020-2025

- **Biomedical Multimodal:**
  - **Introduced a state-of-the-art multimodal sleep staging model** (IEEE TNSRE).
  - **Evaluated several multimodal fusion strategies** for performance and robustness (same submission).
  - **Built a Python toolbox for biomedical signal preprocessing**.
- **Multimodal Competition:**
  - **Developed a dynamic gradient-modulative, multi-loss objective for balanced multimodal training**, achieving 2.8%–14.1% accuracy improvements across datasets (BMVC24).
  - **Unified current SOTA multimodal training objectives** into a single toolbox.
  - **Pioneered a fusion-as-game training model for multimodal competition**, the first to significantly surpass all previous SOTA and ensemble baselines by 0.5-4% accuracy (under review).
- **Led SVM course exercise sessions** from the first year in the MSc of AI.
- **Supervised 7 Master's theses, some** in collaboration with UZ-Leuven and UGhent.

Software Engineer Intern, **Oracle**, Athens, Greece 2018

- Consulted ERP applications using Oracle Suite.

Research Assistant, **LMS UPatras**, Patra, Greece 2017-2018

- Designed a multivariate monitoring system for fault detection of Comau robotic arms.

EDUCATION

PhD, **KU Leuven Stadius**, Leuven, Belgium 2020-2025

Supervisors: Prof. Maarten De Vos & Prof. Johan Suykens

MSc in Artificial Intelligence (Magna Cum Laude), **KU Leuven**, Leuven, Belgium 2019-2020

MSc Thesis: "Active learning for Segmentation with epistemic uncertainty by approx. Bayesian NN"
Relevant Coursework: Computer Vision, Uncertainty in DNN, SVM

BSc & MEng in Electrical and Computer Engineering, **UPatras**, Patra, Greece 2013-2018

MEng Thesis**:** "Verifacion: A decentralized face recognition login system"
MEng Specialization: Computer Engineering (Cum Laude)

PUBLICATIONS

CoRe-Sleep: A Multimodal Fusion Framework for Time Series Robust to Imperfect Modalities.
K.Kontras, C. Chatzichristos, H. Phan, J. Suykens, M. De Vos **IEEE TSNRE 2024**

Improving Multimodal learning with Multi-Loss Gradient Modulation
K.Kontras, C. Chatzichristos, M. Blaschko, M. De Vos **BMVC 2024 and soon extended in IJCV**

Is there benefit in training multimodal models from scratch?
K.Kontras, C. Chatzichristos, M. Blaschko, M. De Vos **Preprint**

Multimodal Competition Regularizer: A game-theorertic approach
K.Kontras, T. Strypsteen, C. Chatzichristos, P. Liang, M. Blaschko, M. De Vos **Preprint**

PUBLIC TALKS

Seminar talk on "Multimodal Competition", KU Leuven 10.2024

Panelist at European Health Summit at the EU Parliament, "Showcases of the digital tech in the health sector" 03.2023

Seminar talk on "Self Supervised learning and its applications to EEG", KU Leuven 04.2022

AWARDS ON PHD

OxML 2023 Summer School Kaggle Challenge Winner – Secured first place in Breast Cancer Biopsy Classification, demonstrating advanced and rapid model development.
VSC Tier-1 Compute Grant – Awarded €40,000 for the project "Tackling Multimodal Competition in Multimodal Supervised Deep Learning", enabling expanded computational resources.