Ciem Cornelissen

PhD Researcher in Computer Science Engineering
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Education

Ghent University - imec — Ghent, Belgium
PhD in Computer Science Engineering – Deep learning & Robotic sensing — *Jun. 2024 – Present*
- Affiliated with **IDLab**, Department of Information Technology

KU Leuven — Leuven, Belgium
Advanced Master of Artificial Intelligence – Magna Cum Laude — *Sep. 2022 – Jun. 2023*
- Specialization: Deep Learning, Computer Vision
- Master's Thesis: "Quantum Computing for Earth Observation"

Ghent University — Ghent, Belgium
Master of Science in Physics – Cum Laude — *Sep. 2020 – Jun. 2022*
- Master's Thesis: "Criticality and Forecasting of the Cryptocurrency Market"

Research Experience

PhD Researcher — Jun. 2024 – Present
IDLab, Ghent University - imec — *Ghent, Belgium*
- Developed LISA (Light-Invariant Spectral Autoencoder), a domain-adversarial deep learning framework for illumination-invariant hyperspectral imaging analysis, improving quality prediction generalization by over 20%
- Created the OHSLIC algorithm for efficient UAV-based hyperspectral segmentation, achieving a 10x reduction in inference time (12.2ms vs 130.2ms) and a 25% improvement in prediction accuracy (R^2) over previous methods on an NVIDIA Jetson Nano.
- Built end-to-end IoT-enabled robotic system for non-destructive grape yield and quality mapping in precision viticulture, achieving 0.82 recall for bunch detection and $R^2 = 0.76$ for weight prediction

Publications

In-Field Mapping of Grape Yield and Quality with Illumination-Invariant Deep Learning — 2025
- *IEEE Internet of Things Journal* (Oct. 2025)
- Developed LISA framework for illumination-invariant hyperspectral imaging in precision viticulture
- Complete IoT-enabled robotic system for non-destructive, real-time mapping of grape yield and quality
- Authors: S. De Coninck, A. Willekens, S. Leroux, P. Simoens

Adaptive Clustering for Efficient Phenotype Segmentation of UAV Hyperspectral Data — 2025
- *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops* (Mar. 2025)
- Introduced OHSLIC algorithm for computationally efficient, real-time phenotype segmentation
- Enables on-device processing on UAVs with superior accuracy and reduced inference time
- Authors: S. Leroux, P. Simoens

Computational Fairness in Adaptive Neural Networks — 2025
- *Neural Computing and Applications* (Jun. 2025)
- Contributed to investigation into fairness of adaptive neural networks and computational resource allocation
- Research introduces computational resource allocation as a new dimension of AI fairness
- Authors: S. Leroux, **C. Cornelissen**, V. Sharma, P. Simoens

Technical Skills

Machine Learning & AI: Deep Learning, Computer Vision, Domain-Adversarial Learning, Adaptive Neural Networks, Reinforcement Learning, PyTorch, TensorFlow
Sensors & Data Processing: Hyperspectral Imaging (HSI), RGB and SWIR Sensors, Multi-modal Sensor Fusion, UAV-based Remote Sensing, Spectral Analysis
Programming Languages: Python, C/C++, Java, Matlab, Prolog, LaTeX
Software Development: Git, Docker, IoT Systems, Field Robotics, Linux
Languages: Dutch (Native), English (Fluent, C2 level)