EU-LI-PHE
EUROPEAN NETWORK ON LIVESTOCK PHENOMICS

FROM DATA TO DISCOVERY: MEASURING & ANALYZING LIVESTOCK PHENOTYPES

2ND EU-LI-PHE TRAINING SCHOOL

LEUVEN 14/7/2025- 18/7/2025

HOGENHEUVELCOLLEGE NAAMSESTRAAT 69, 3000, LEUVEN, BELGIUM

DETAILED AGENDA

Session	Monday, 14 July	Tuesday, 15 July	Wed, 16 July	Thur, 17 July	Friday, 18 July
09:00 12:30	Sensors for Livestock Measurement and Monitoring *Ali Youssef (WUR), Tomas Norton (KUL), Elma Zanaj (UT)*	Frequency-Based Signal Processing *Ali Youssef (WUR), Tomas Norton (KUL)*	Quantification of Animal Resilience *Masoomeh Taghipoor (INRAE)*	Analyzing Animal Vocalizations Using Sound Processing *Özge Günaydın (KUL), Antonis Gkolfidis (KUL)*	Phenotyping Insects: Imaging and Computational Approaches *Grum Gebreyesus (AU)*
Description	*Introduction to sensors for livestock monitoring, including selection, setup, and signal processing techniques. Hands-on demos using smartphones.*	*Fourier Transform, Fast Fourier Transform (FFT), and filtering techniques for analyzing 1D and 2D signals in animal phenotyping.*	*Modeling approaches to quantify animal resilience using behavioral and production data. Hands-on exercises with milk yield, growth, and feed intake data.*	*Introduction to bioacoustics and ML for audio data analysis, working with real-world pig/poultry vocalization datasets.*	*Imaging and ML techniques for phenotyping black soldier flies, covering RGB/spectral imaging and trait extraction. Hands-on session using real datasets.*
Lunch Break : 12:30 - 13:30					
13:30 17:00	Time-Series Analysis of Animal Data *Tomas Norton (KUL), Ali Youssef (WU)*	Basics of Learning and Machine Learning *Ahmed Youssef (J&J), Andrea Parmiggiani (KUL)*	Mid-Infrared Spectral Analysis of Milk Data *Helène Soyeurt*	Analyzing Animal Behaviors Using Computer Vision *Dong Liu (KUL)*	Student Presentations & Q&A *All Available Teachers*
Description	*Introduction to time-series analysis, including Box-Jenkins models, ARX modeling, and noise filtering techniques.*	*Fundamentals of ML, including bias-variance trade-off, regularization, and structuring data for ML models.*	*ML techniques for modeling milk spectral data, including pre-treatment, data cleaning, and a hands-on Python session.*	*Fundamentals of computer vision in animal monitoring, including image processing techniques and real-life examples.*	*Participants present research topics, discuss data collected, and apply learned methods.*
Evening Activities	**Dinner Downtown (18:30)**		**Tour (18:00)**	**Social Event (18:00, organized by KUL students)**	**Travel Home (16:00)**