'Cornucopia'
Arno Coenen and Iris Roskam
Markthal - Rotterdam

PhD degree: Biodiversity in Agriculture and Forestry
Summer Lectures – 17-18 July 2024

An introduction to Machine Learning and applications to Agrifood

Lectures :

Day 1 (17 July 2024) 3 hours

- "Introduction to machine learning, terminology, types of machine learning, what "learning" means, intuitive understanding of the gradient descent algorithm" – 09:30 – 10:30
- "Model validation" – 10:30 – 11:10
- Pause – 11:10 – 11:30
- "Unbalanced Datasets and Metrics" 11:30 – 12:30

Dr. Umberto Michelucci

Prof. Dr. Francesca Venturini

Day 2 (18 July 2024) 3 hours

- "Introduction to Neural Networks" - 09:30 – 10:30
- Pause – 10:30 – 10:50
- "Introduction to Python, Jupyter Notebooks, development environments, best practices, etc." – 10:50 – 11:30
- "Application of machine learning to food quality control: examples for olive oil, maize and wine" 11:30 – 12:30

Aula E, Department SAAF

- **Dr. Umberto Michelucci**

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Umberto Michelucci is senior lecturer at the Lucerne University of Applied Sciences. He studied theoretical physics in Florence, Italy, focusing on theoretical simulations of atom entrapment with lasers and high-temperature superconductors. He holds a PhD in computer science and machine learning from the University of Portsmouth, with a focus in multi-task learning neural networks for optics and sensor science. He authored five books and several journal and conference papers. He is co-founder of TOELT LLC, a company focused on research in machine learning, and he is a Google Developer Expert in Machine Learning.

- **Prof. Dr. Francesca Venturini**

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Francesca Venturini is full professor at the Zurich University of Applied Sciences, Switzerland. She received her MS degree in physics from the University of Florence, Italy in 1997, and her PhD degree from the Technical University of Munich, Germany in 2003. She is co-founder of TOELT LLC. She has authored more than 60 journal and conference papers and registered nine patents. Her research interests are optical spectroscopy and the development of new machine learning approaches for data analysis and the development of explainability techniques.