

University of Pavia

Ph.D. School of Electrical and Electronics Engineering and Computer Science

# Theoretical Introduction and Applications of Machine and Deep Learning

Two days' workshop in collaboration with AWS Italy and Neosperience

April 23<sup>rd</sup> and 30<sup>th</sup> 2021  
Online seminar on Zoom

**Abstract:** In the last years we assisted to a rapid grow of artificial intelligence, machine learning (ML), and deep learning (DL). These technologies are now commonly employed in many different fields, such as image and video processing, car driving, natural language processing, robotics, data analysis healthcare, and so on.

This two days' workshop, realized in collaboration with Amazon Web Service (AWS) Italy and Neosperience, aims to illustrate some of the current state-of-the-art ML and DL methods and the achievable results. The seminars include both theoretical lectures and interactive demos of AWS software made available for the participants.

**Registration is mandatory. Registration closes on April 19<sup>th</sup>**

## Organizers

Prof. Luca Lombardi  
Piercarlo Dondi, PhD

## Ph.D. Coordinator

Prof. Paolo Di Barba

Seminar in English

Registration form: <https://forms.gle/87gCM5g66TFUCuZF6>

The Zoom link will be sent to all the registered participants a few days before the start.

For more information: [luca.lombardi@unipv.it](mailto:luca.lombardi@unipv.it), [piercarlo.dondi@unipv.it](mailto:piercarlo.dondi@unipv.it)

## Program overview:

### **Day 1 – April 23, from 9:00 am to 4:30 pm**

**Title:** Opening

**Contents:** introduction to research and AI applications

**Duration:** 2 hours

**Time Slot:** 9 – 11 am CET

**Speakers:** Luca Bianchi, Neosperience CTO, AWS Hero and Piercarlo Dondi, research fellow, University of Pavia

**Title:** Data Engineering: Preparing data for Machine Learning

**Contents:** AWS Analytics overview and demo of AWS Glue DataBrew (visual data preparation)

**Duration:** 2 hours

**Time Slot:** 11:15 – 13 am CET

**Speakers:** Francesco Marelli and Cristian Gavazzeni, AWS Solutions Architects

**Title:** Introduction to AI & ML on AWS

**Contents:** Introduction to AI & ML on AWS, Amazon SageMaker overview and demo

**Duration:** 2 hours

**Time Slot:** 2:30 – 4:30 pm CET

**Speakers:** Veziona Ekonomi and Luca Guida, AWS Solutions Architects

### **Day 2 – April 30, from 9 am to 4:30 pm**

**Title:** Medical Imaging on AWS

**Contents:** AWS services used for Medical Imaging (ParallelCluster, FSx for Lustre, S3, GPUs) Relevance of Medical Imaging (e.g.: drug design, specifically for COVID-19)

**Duration:** 1 hour

**Time Slot:** 9 – 10 am CET

**Speaker:** Brian Skjerven, AWS HPC Specialist Solutions Architect

**Title:** Computational Fluid Dynamics and ML

**Contents:** Revolutionizing the design of the next generation of cars and planes

**Duration:** 1 hour

**Time Slot:** 10 – 11 am CET

**Speaker:** Neil Ashton, AWS CFD Specialist Solutions Architect

**Title:** Computer Vision on AWS

**Contents:** Overview and hands-on demo

**Duration:** 1 hour

**Time Slot:** 11:15 am – 12:15pm CET

**Speaker:** Alex Casalboni, AWS Developer Advocate

**Title:** Amazon SageMaker Hands-On Workshop

**Content:** Amazon SageMaker demo

**Duration:** 2 hours

**Time Slot:** 2pm-4pm CET

**Speakers:** Veziona Ekonomi and Luca Guida, AWS Solutions Architects

**Title:** Closing

**Contents:** Discussion and conclusion

**Duration:** 30 minutes

**Time Slot:** 4 – 4:30 pm CET

**Speakers:** Luca Bianchi, Piercarlo Dondi, Luca Lombardi, et al.