University of Pavia

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

ONLINE SEMINARS

Machine and Deep Learning applied to Cultural Heritage
Piercarlo Dondi, PhD
University of Pavia
June 18th, 2021 – from 9:00 to 11:00

Introduction to PyTorch Lightning
Luca Bianchi, PhD
Neosperience SpA
June 25th, 2021 – from 9:00 to 11:00

Zoom link
Meeting ID: 897 6024 9545
Passcode: 338854

Summary:
These two seminars deepen the topics discussed in April with the workshop "*Theoretical Introduction and Applications of Machine and Deep Learning*" realized in collaboration with AWS and Neosperience SpA.
Basic concepts introduced during the workshop will be reprised when needed.

For the second seminar prior knowledge of Python programming language is required. Prior knowledge of PyTorch framework is not mandatory.

The date of the second seminar has been changed, the first one is confirmed.

Organizer	**Ph.D. Coordinator**
Prof. Luca Lombardi	Prof. Paolo Di Barba

Seminar in English
For more information: luca.lombardi@unipv.it

Program overview:

Timeslot: June 18th, 9:00 – 11:00
Title: Machine and Deep Learning applied to Cultural Heritage
Abstract: The first application of computer science techniques to the study of artworks dated back to some pioneering works in early 60s, but it is only from the 90s that computer science has been gradually applied to the Cultural Heritage field. Nowadays, the digitization of artwork, the analysis of diagnostic images, or the creation of multimodal interactive installation inside museums are common practice applied all around the worlds. However, the use of machine (ML) and deep learning (DL) techniques is still very limited, mainly due to the small amount of available data. Nevertheless, in the last years, we assisted to a renewed interest in the field and new approaches and solutions have been proposed to solve many problems from classification to restorations. This seminar aims to introduce the challenges related to the application of ML and DL techniques in Cultural Heritage and present possible future trends. Then, two use cases (stylistic analysis and fresco reconstruction) will be discussed in detail.
Speaker: Piercarlo Dondi, PhD, Researcher, University of Pavia
Bio: Piercarlo Dondi received the MSc degree in Computer Engineering at University of Pavia in 2008. In 2012, He completed the PhD in Electronics, Computer Science and Electrical Engineering. Since 2014 He carries out scientific research at "Computer Vision and Multimedia Lab" and "Arvedi Laboratory of non-invasive diagnostics" of University of Pavia as researcher. His main research topics involve image processing, 3D modeling and Human-Computer interaction, with a special focus of Cultural Heritage applications.

Timeslot: June 25th, 9:00 – 11:00
Title: Introduction to PyTorch Lightning
Abstract: Training machine learning (ML) models and managing ML pipelines is not an easy task, requiring joining together many different aspects related to feature engineering, data cleaning or model deployment. In this advanced session we will explore how to leverage the power of Amazon SageMaker platform to clean, filter and aggregate our dataset into usable features. Then we will introduce PyTorch Lightning framework for model training following a standard architecture. Finally, we will see how to train a deep neural network directly from your laptop, using Amazon SageMaker Platform and SageMaker framework.
Speaker: Luca Bianchi, PhD, Neosperience CTO
Bio: Luca Bianchi works on computer vision and deep learning since 2006, with focus on multi-processor architectures and parallel programming. Serving as Chief Technology Officer at Neosperience, he defines himself half software architect and half data scientist. Passionate about machine learning and serverless architectures, is founder of Serverless Meetup Italy and, since 2020, AWS Serverless Hero.