

CIVIL-611

Frontiers of Deep Learning for Engineers

Alahi Alexandre, Fink Olga, Tuia Devis

Cursus	Sem.	Type
Civil & Environmental Engineering		Opt.
Robotics, Control and Intelligent Systems		Opt.

Language of teaching	English
Credits	4
Session	
Exam	Oral presentation
Workload	120h
Hours	56
Practical work	28
Project	28
Number of positions	15

Frequency

Every year

Remark

Doing a PhD in deep learning is a pre-requisite. Next time Fall 2023, max 15 part. Priority to EDCE and EDRS students. Registration link available below under "Notes".

Summary

The seminar aims at discussing recent research papers in the field of deep learning, implementing the transferability/adaptability of the proposed approaches to applications in the field of research of the Ph.D. student.

Content

The class is structured into 2 parts. During the first part, students will present selected key ML papers. The papers are curated by the teaching staff based on their technical depth. Then, in the second part of the course, the student will present their project using one of the presented methods for their own research of interest. Students have the freedom to pick their application of interest.

With the increasing amount of data collected in various domains, the importance of data science in many disciplines, such as infrastructure monitoring and management, transportation, spatial planning, structural and environmental engineering, has been increasing. The field is constantly developing further with numerous advances, extensions and modifications.

The course aims at discussing recent research papers in the field of machine learning, analyzing the transferability/adaptability of the proposed approaches to applications in the field of research and implementing the adapted algorithms to the field of research.

Each student will select a paper that is relevant for his/her research and present its content in the seminar, putting it into context, analyzing the assumptions, the transferability and generalizability of the proposed approaches. The students will also link the research content of the selected paper to their own research, evaluating the potential of transferring or adapting it. In the second part of the course, the students will implement, adapt and extend the selected algorithms. The students will work individually on their own project. Yet, the students will be reading each other's selected papers, providing feedback to each other.

Note

Register here:

<https://forms.gle/UswiZqN9wopsdLo77>

We will notify you of your registration some days before start.

Keywords

Deep learning, Machine learning

Learning Prerequisites

Required courses

A deep learning class (bachelor or master level)

Resources

Moodle Link

- <https://go.epfl.ch/CIVIL-611>