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11th INTERNATIONAL SCHOOL ON DEEP LEARNING
(and the Future of Artificial Intelligence)

DeepLearn 2024

Porto – Maia, Portugal

July 15-19, 2024

https://deeplearn.irdta.eu/2024/

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Co-organized by:

University of Maia

Institute for Research Development, Training and Advice – IRDTA
Brussels/London

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Regular registration: July 12, 2024

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SCOPE:

DeepLearn 2024 will be a research training event with a global scope aiming at updating participants on the most recent advances in the critical and fast developing area of deep learning. Previous events were held in Bilbao, Genova, Warsaw, Las Palmas de Gran Canaria, Guimarães, Las Palmas de Gran Canaria, Luleå, Bournemouth, Bari and Las Palmas de Gran Canaria.

Deep learning is a branch of artificial intelligence covering a spectrum of current frontier research and industrial innovation that provides more efficient algorithms to deal with large-scale data in a huge variety of environments: computer vision, neurosciences, speech recognition, language processing, human-computer interaction, drug discovery, health informatics, medical image analysis, recommender systems, advertising, fraud detection, robotics, games, finance, biotechnology, physics experiments, biometrics, communications, climate sciences, geographic information systems, signal processing, genomics, materials design, video technology, social systems, etc. etc.

The field is also raising a number of relevant questions about robustness of the algorithms, explainability, transparency, and important ethical concerns at the frontier of current knowledge that deserve careful multidisciplinary discussion.

Most deep learning subareas will be displayed, and main challenges identified through 16 four-hour and a half courses, 2 keynote lectures, 1 round table and a few hackathon-type competitions among students, which will tackle the most active and promising topics. Renowned academics and industry pioneers will lecture and share their views with the audience. The organizers are convinced that outstanding speakers will attract the brightest and most motivated students. Face to face interaction and networking will be main ingredients of the event. It will be also possible to fully participate in vivo remotely.

ADDRESSED TO:

Graduate students, postgraduate students and industry practitioners will be typical profiles of participants. However, there are no formal pre-requisites for attendance in terms of academic degrees, so people less or more advanced in their career will be welcome as well.

Since there will be a variety of levels, specific knowledge background may be assumed for some of the courses.

Overall, DeepLearn 2024 is addressed to students, researchers and practitioners who want to keep themselves updated about recent developments and future trends. All will surely find it fruitful to listen to and discuss with major researchers, industry leaders and innovators.

VENUE:

DeepLearn 2024 will take place in Porto, the second largest city in Portugal, recognized by UNESCO in 1996 as a World Heritage Site. The venue will be:

University of Maia
Avenida Carlos de Oliveira Campos - Castêlo da Maia
4475-690 Maia
Porto, Portugal

https://www.umaia.pt/en

STRUCTURE:

3 courses will run in parallel during the whole event. Participants will be able to freely choose the courses they wish to attend as well as to move from one to another.

All lectures will be videorecorded. Participants will be able to watch them again for 45 days after the event.

An open session will give participants the opportunity to present their own work in progress in 5 minutes. Also companies will be able to present their technical developments for 10 minutes.

This year's edition of the school will schedule hands-on activities including mini-hackathons, where participants will work in teams to tackle several machine learning challenges.

Full live online participation will be possible. The organizers highlight, however, the importance of face to face interaction and networking in this kind of research training event.

KEYNOTE SPEAKERS:

Jiawei Han (University of Illinois Urbana-Champaign), How Can Large Language Models Contribute to Effective Text Mining?

Katia Sycara (Carnegie Mellon University), Effective Adaptation in Multi-Agent Teams

PROFESSORS AND COURSES:

Luca Benini (Swiss Federal Institute of Technology Zurich), [intermediate/advanced] Open Hardware Platforms for Edge Machine Learning

Gustau Camps-Valls (University of València), [intermediate] AI for Earth, Climate, and Sustainability

Nitesh Chawla (University of Notre Dame), [introductory/intermediate] Introduction to Representation Learning on Graphs

Daniel Cremers (Technical University of Munich), [introductory/advanced] Deep Networks for 3D Computer Vision

Peng Cui (Tsinghua University), [intermediate/advanced] Stable Learning for Out-of-Distribution Generalization: Invariance, Causality and Heterogeneity

Sergei V. Gleyzer (University of Alabama), [introductory/intermediate] Machine Learning Fundamentals and Their Applications to Very Large Scientific Data: Rare Signal and Feature Extraction, End-to-End Deep Learning, Uncertainty Estimation and Realtime Machine Learning Applications in Software and Hardware

Yulan He (King's College London), [introductory/intermediate] Machine Reading Comprehension with Large Language Models

Frank Hutter (University of Freiburg), [intermediate/advanced] Automated Machine Learning, or Deep Learning 2.0: AI that Builds and Improves AI

George Karypis (University of Minnesota), [intermediate/advanced] Optimizing LLM Inference

Hermann Ney (RWTH Aachen University / AppTek), [intermediate/advanced] Machine Learning and Deep Learning for Speech & Language Technology: A Probabilistic Perspective

Massimiliano Pontil (Italian Institute of Technology), [intermediate/advanced] Operator Learning for Dynamical Systems

Elisa Ricci (University of Trento), [intermediate] Continual and Adaptive Learning in Computer Vision

Wojciech Samek (Fraunhofer Heinrich Hertz Institute / Technical University of Berlin), [introductory/intermediate] From Feature Attributions to Next-Generation Explainable AI

Xinghua Mindy Shi (Temple University), [introductory/intermediate] Trustworthy Machine Learning for Human Health and Medicine

Michalis Vazirgiannis (École Polytechnique), [intermediate/advanced] Graph Machine Learning and Multimodal Graph Generative AI

James Zou (Stanford University), [introductory/intermediate] Large Language Models and Biomedical Applications *[videorecorded]*

OPEN SESSION:

An open session will collect 5-minute voluntary oral presentations of work in progress by participants.

They should submit a half-page abstract containing the title, authors, and summary of the research to david@irdta.eu by July 7, 2024.

INDUSTRIAL SESSION:

A session will be devoted to 10-minute demonstrations of practical applications of deep learning in industry.

Companies interested in contributing are welcome to submit a 1-page abstract containing the program of the demonstration and the logistics needed. People in charge of the demonstration must register for the event.

Expressions of interest have to be submitted to david@irdta.eu by July 7, 2024.

HACKATHONS:

Hackathons will take place, where participants will work in teams to tackle several machine learning challenges. They will be coordinated by Professor Sergei V. Gleyzer. The challenges will be released 2 weeks before the beginning of the school. A jury will judge the submissions and the winners of each challenge will be announced on August 9. The winning teams will receive a small prize and the runners-up will get a certificate.

EMPLOYERS:

Organizations searching for personnel well skilled in deep learning will be provided a space for one-to-one contacts.

It is recommended to produce a 1-page .pdf leaflet with a brief description of the organization and the profiles looked for to be circulated among the participants prior to the event. People in charge of the search must register for the event.

Expressions of interest have to be submitted to david@irdta.eu by July 7, 2024.

SPONSORS:

Companies/institutions/organizations willing to be sponsors of the event can download the sponsorship leaflet from

https://deeplearn.irdta.eu/2024/sponsoring/

ORGANIZING COMMITTEE:

José Paulo Marques dos Santos (Maia, local chair)
Carlos Martín-Vide (Tarragona, program chair)
Sara Morales (Brussels)
José Luís Reis (Maia)
Luís Paulo Reis (Porto)
David Silva (London, organization chair)

REGISTRATION:

It has to be done at

https://deeplearn.irdta.eu/2024/registration/

The selection of 8 courses requested in the registration template is only tentative and non-binding. For logistical reasons, it will be helpful to have an estimation of the respective demand for each course.

Since the capacity of the venue is limited, registration requests will be processed on a first come first served basis. The registration period will be closed and the on-line registration tool disabled when the capacity of the venue will have got exhausted. It is highly recommended to register prior to the event.

FEES:

Fees comprise access to all program activities and lunches.

There are several early registration deadlines. Fees depend on the registration deadline.

The fees for on site and for online participation are the same.

ACCOMMODATION:

Accommodation suggestions are available at

https://deeplearn.irdta.eu/2024/accommodation/

CERTIFICATE:

A certificate of successful participation in the event will be delivered indicating the number of hours of lectures. This should be sufficient for those participants who plan to request ECTS recognition from their home university.

QUESTIONS AND FURTHER INFORMATION:

david@irdta.eu

ACKNOWLEDGMENTS:

Universidade da Maia

Universidade do Porto

Universitat Rovira i Virgili

Institute for Research Development, Training and Advice – IRDTA, Brussels/London