Deep Layers

WORKSHOP / ARTIFICIAL INTELLIGENCE

Registration link:

3. - 4. 11. 2026

Institute of Scientific Instruments of the Czech Academy of Sciences
Kralovopolska 147, Brno, Czech Republic

Deep Layers
a machine-learning forum

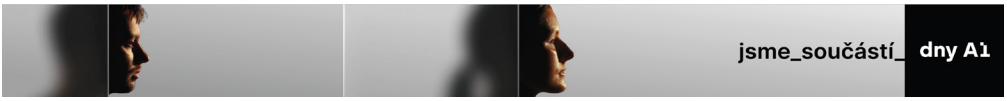
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Průlomové technologie budoucnosti

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PROGRAM / Tuesday / 3. 11 . 2026 - Tutorials for AI beginners

09:30 - 9:40 Foreword by **DeepLayers 2026** organizers

09:40 - 10:25 **Machine-learning Elements I: Data treatment**

by F. Plesinger (ISI of the CAS - AIMT, Brno, CZ)

- What is AI (today)
- Approaches to explore tabular data
- Cleaning and understanding data
- Hidden risks in raw data

10:25 - 10:40 **Coffee break**

10:40 - 11:25 **Machine-learning Elements II: Modelling tutorial**

by M. Daňková (ISI of the CAS, Brno, CZ)

- Experiments with easy-to-use models
- Performance metrix
- Insight into features effect

11:25 - 12:25 **Lunch (provided)**

12:25 - 13:25 **Deep-learning (DL) Elements I**

by V. Hrtoňová (ISI of the CAS, Brno, CZ)

- Basic principles and how deep learning works
- Practical applications and examples of DL
- Typical failures, limitations and potential pitfalls

13:25 - 13:40 **Coffee break**

13:40 - 14:25 **Deep-learning Elements II**

by J. Pavlus (ISI of the CAS, Brno, CZ)

- DL architectures: CNNs, RNNs and transformers
- From sequence modelling to large language models such as GPT
- Text and signal data and their use in practice

THE PROGRAMME MIGHT CHANGE

PROGRAM / Wednesday / 4. 11 . 2026 - AI applications & news

09:30- 10:00 **AI Agents in 2026**
by P. Nejedly (ISI of the CAS - CN, CZ)

10:00 - 10:30 **ECG Synthesizer: VAE from design to implementation**
by R. Zbanek (ISI of the CAS, Brno, CZ)

10:30 - 10:45 **Coffee break**

10:45 - 11:15 **Localizing Epileptogenic Tissue Using a Distance-Aware Transformer Model** by V. Hrtoňová (ISI of the CAS, CZ)

11:15 - 11:45 **AI Factories: How to Access Them and What They Offer**
by J. Novák (IT4Innovations, Ostrava, CZ)

11:45 - 12:45 **Lunch (provided)**

12:45 - 13:15 **Signal separation without ground truth: neural networks for electron diffraction**
by P. Sikorová (ISI of the CAS)

13:15 - 13:45 **ECG Analysis Using AI**
by Z. Koscova (VDI Technologies/ISI of the CAS, Brno, CZ)

13:45 - 14:00 **Coffee break**

14:00 - 14:30 **BUT Speech@FIT: staying afloat in the era of LLMs and large pre-trained models**
by J. Černocký (FIT BUT, Brno, CZ)

14:30 - 15:00 **Securing Digital Onboarding: The Role of Natural Language in Machine Learning for Identity Verification**
by J. Pavlus (ISI of the CAS, Brno, CZ)

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Deep Layers forum will serve as a place to connect people, share knowledge, compare approaches and see how specific model architectures can help to solve particular tasks. The meeting is organized by a scientific group of Artificial Intelligence and Medical Technologies with the support of the Brno.AI cluster and financial support of Czech Academy of Sciences - Strategie AV21.

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