

# Time Series II

Course code: MLC\_TISEA

The course is intended for people who want to deepen their knowledge and experience in the field of time series analysis. This is a follow-up course of Time Series, which focuses mainly on other time series domains and their specifics. We will particularly study sound data with a combination of recurrent and convolutional neural networks and the sentiment analysis task on textual data.

## Who is the course for

The course is intended for people who want to deepen their knowledge and experience in the field of time series analysis.

## Required skills

- basic knowledge of programming in Python
- high school level of mathematics
- Knowledge of machine learning on the level of our course Time Series

## Course outline

- Advanced feature preprocessing
- Classification/pattern detection in sound data
- Short-time Fourier transformation
- CNN for sound classification: spectrogram as an image
- LSTM & CNN combination
- Example: Speech detection using neural networks
- Time series prediction from textual features
- Data preprocessing
- Sentence & word tokenization
- Model-based vs. dictionary-based word embeddings
- Of-the-shelf pre-trained word-embeddings models
- Pre-training with auxiliary classification tasks
- Model combination & fine-tune training
- Example: Time series predictions using sentiment analysis of news data

### GOPAS Praha

Kodáňská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

### GOPAS Brno

Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

### GOPAS Bratislava

Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)



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