

Machine Learning Methods for Small Datasets in Multimodal Behavior Processing (Journal Club)

Details

Zoom Room: <https://uni-bielefeld.zoom.us/j/97557637148?pwd=VVQ1N2toenVXUitiS3FtS2RZdGxWUT09>

Courses Start: **10.10.2022**

Courses End: **03.02.2023**

Day: **Tuesday 14:00**

Room: **CITEC-3.220**

Holidays :

- Allerheiligen: 01.Nov
- Christmas Break: 23.Dec - 09.Jan (2 weeks)

Description

In this seminar, you will learn about current methods in machine learning for training models with small datasets. With the emergence of deep learning, state-of-the-art machine learning models require increasingly large datasets. Acquiring the data needed to train these models, however, can be expensive, especially in the context of multimodal behavior processing which often requires performing experiments with human subjects. We will read and analyze papers discussing methods for performing machine learning with small datasets. Further, you will get to know how to critically evaluate articles in the scientific literature. In each session, we will discuss a current paper that everyone has read in the week before. Credits can be obtained through weekly reading, and by preparing and moderating a discussion for one of the assigned research papers.

Semester Outline

Date	Title	Topic
Oct. 11	Introduction	Introduction
Oct. 18	Part 1: <i>Machine learning algorithm validation with a limited sample size</i>	Evaluation / Nested CV
Oct. 25	Part 2: <i>Machine learning algorithm validation with a limited sample size</i>	Evaluation / Nested CV
Nov. 01	Holiday	Allerheiligen
Nov. 08	Part 1 and 2: <i>Predicting sample size required for classification performance</i>	Dataset sample size prediction
Nov. 15	Part 1: <i>Improved Speech Emotion Recognition using Transfer Learning and Spectrogram Augmentation</i>	Transfer Learning
Nov. 22	Part 2: <i>Improved Speech Emotion Recognition using Transfer Learning and Spectrogram Augmentation</i>	Transfer Learning
Nov. 29	Part 1: <i>Mixup: Beyond Empirical Risk Minimization</i>	Data Augmentation
Dec. 06	Part 2: <i>Mixup: Beyond Empirical Risk Minimization</i>	Data Augmentation
Dec. 13	Part 1: <i>Look, Listen, Learn</i>	Embeddings / Pretrained Feature Extractor
Dec. 20	Part 2: <i>Look, Listen, Learn</i>	Embeddings / Pretrained Feature Extractor
Dec. 27	Holiday	Winter Break
Jan. 03	Holiday	Winter Break
Jan. 10	Part 1: <i>FixMatch: Simplifying Semi-Supervised Learning with Consistency and Confidence</i>	Semi Supervised
Jan. 17	Part 2: <i>FixMatch: Simplifying Semi-Supervised Learning with Consistency and Confidence</i>	Semi Supervised
Jan. 24	Part 1: <i>Learning to Compare: Relation Network for Few-Shot Learning</i>	Few-shot learning and Meta Learning
Jan. 31	Part 2: <i>Learning to Compare: Relation Network for Few-Shot Learning</i>	Few-shot learning and Meta Learning