



Friedrich-Alexander-Universität
Research Center for
Mathematics of Data | MoD

FAU MoD Lecture Series



Thoughts on Machine Learning

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WHEN

Friday **September 20, 2024**
14:30H (Berlin time)

WHERE

On-site / Online

Friedrich-Alexander-Universität
Erlangen-Nürnberg
Room H13 Johann-Radon-Hörsaal
Cauerstraße 11, 91058
Erlangen - Bavaria, Germany

FAU Zoom link:

<https://fau.zoom-x.de/j/62410943213>

Meeting ID: **624 1094 3213**

PIN code: **694096**

Techniques of machine learning (ML) find a rapidly increasing range of applications touching upon social, economic, and technological aspects of everyday life. They are also being used with great enthusiasm to fill in gaps in our scientific knowledge by data-based modelling approaches.

I have followed these developments for a while with interest, concern, and mounting disappointment. When these technologies are employed to take over decisive functionality in safety-critical applications, we would like to exactly know how to guarantee their compliance with pre-defined guardrails and limitations.

Moreover, when they are utilized as building blocks in scientific research, it would violate scientific standards -in my opinion- if these building blocks were used without a thorough understanding of their functionality, including inaccuracies, uncertainties, and other pitfalls.

In this context, I will juxtapose (a subset of) deep neural network methods with the family of entropy-optimal Sparse Probabilistic Approximation (sSPA) techniques developed recently by Illia Horenko (RPTU Kaiserslautern-Landau) and colleagues.