Bavarian Optimization Meeting 2024
Passau

Keynote Talk 1 <u>by Gitta Kutyniok</u>

Reliable AI Through the Lens of Optimization

Abstract

The new wave of artificial intelligence is impacting industry, public life, and the sciences in an unprecedented manner. However, one current major drawback is the lack of reliability. This is also acknowledged by political regularization attempts such as the EU AI Act and the G7 Hiroshima AI Process.

In this lecture we will take an optimization viewpoint towards this problem. We will first provide an introduction into this vibrant research area, focussing specifically on deep neural networks. We will then survey recent advances concerning the analysis of the training algorithm and explainability. Finally, we will discuss fundamental limitations of the training phase of deep neural networks, and reveal a surprising connection to novel computing approaches such as neuromorphic computing and quantum computing.