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Reliable AI: From Applied Harmonic Analysis to Quantum Computing

vendredi 21 avril 2023 10:00 (30 minutes)

The new wave of artificial intelligence is impacting industry, public life, and the sciences in an unprecedented manner. In mathematics, it has by now already led to paradigm changes in several areas. However, one current major drawback is the lack of reliability of such methodologies.

In this talk, we will focus on the key aspects of reliability of deep neural networks, namely generalization, and explainability, and discuss a complete generalization result in the setting of graph neural networks and a novel explainability approach based on applied harmonic analysis. Finally, we will briefly touch upon limitations as well, show that from a computability viewpoint digital hardware causes a serious problem for reliability, and reveal a surprising connection to novel computing approaches such as quantum computing.

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