

**Title:** Is Deep Learning really better for high-dimensional problems? Empirical-based comparisons between state-of-the-art learning algorithms and modern statistical models.

**Abstract:**

Deep Learning is omnipresent and used in many scientific and industrial fields. However, with the sometimes blind reliance on Big Data and Artificial Intelligence, modern approaches from high-dimensional statistics are sometimes ignored.

The aim of this Master's thesis is therefore to compare different deep learning methods with methods from high-dimensional statistics and, if applicable, hybrid approaches on empirical data. Depending on the students' interest, we consider standard data sets from different application areas (e.g. CIFAR-100 from the tiny image dataset). For the evaluation, various aspects have to be considered, such as accuracy, sensitivity, interpretability and required computing power.

The prerequisite is a sound knowledge of programming (preferably in Python) and statistics as well as machine learning, or a strong motivation to acquire this knowledge.

The work program will be designed in such a way that it may lead to a joint scientific publication.

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