

Concepts for deep learning in imaging, applications to magnetic particle imaging

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Abstract

Data analysis is presently experiencing a clash of cultures. The classical approaches of model based data and image analysis, e.g. tomographic image reconstruction or morphological image processing concepts, are challenged by purely data driven concepts from machine learning.

In this talk we aim at combining both approaches. We will start with almost trivial applications, where however a direct application of neural networks fail. We then investigate certain network designs and demonstrate how mathematical inside into the underlying physical models will lead to rather specific optimized network designs. We then exemplify the interplay between model and data driven approaches in the field of magnetic particle imaging.