Digital Total - Computing & Data Science an der Universität Hamburg und in der Wissenschaftsmetropole Hamburg



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Combining numerical methods and machine learning for physical and engineering sciences

Many areas in the physical or engineering sciences rely on computational models to some extent. These models can be based on fundamental physics processe, typically leading to a set of differential equations. Alternatively, machine learning techniques can be used to infer input-output relations out of very large sets of data. Both approaches come with different strengths and weaknesses but rely on mathematical algorithms to function reliably and efficiently. In the last years, we are also increasingly seeing synergies between both worlds, e.g., when ML is used as part of a numerical algorithm for solving differential equations of a physics-based model. Our poster will present case studies for combining ML and numerical methods, with applications including medical imaging and high-performance computing.

Find me @ my poster

Keywords

physics-based modeling machine learning high-performance computing numerical methods medical imaging

TentID

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