

SEMINARVORTRAG

Die Arbeitsgruppe Numerical Analysis lädt zu folgendem Vortrag ein:

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Multilevel optimization on low-rank manifolds **for optimal control problems**

Large-scale finite-dimensional optimization problems arising from the discretization of PDEs (like in optimal control problems) sometimes admit solutions that can be well approximated by low-rank matrices.

In this talk, we will exploit this approximation property by solving the optimization problem directly over the set of low-rank matrices. In particular, we introduce a new multilevel algorithm, where the optimization variable is constrained to the Riemannian manifold of fixed-rank matrices. In contrast to other multilevel low-rank algorithms where the rank is chosen adaptively on each level, we can keep the ranks (and thus the computational complexity) fixed throughout the iterations. Classical implementation of line-search based on Wolfe conditions allows computing a solution with numerical accuracy in the order of the square root of the machine epsilon. Here we adopt approximate Wolfe conditions that allow computing a solution on the order of the machine epsilon. Numerical experiments demonstrate the computational efficiency of the proposed framework.

This is based on joint work with Marco Sutti.

Zeit: **Dienstag, 10. Dezember 2019 um 10.15 Uhr**

Ort: **Technikerstraße 13/7. OG, Seminarraum Mathematik**

Gäste sind herzlich willkommen!

Lukas Einkemmer