Arbeitsgruppe Numerik

6. November 2013

Im Oberseminar

Numerik

wird am

Dienstag, dem 12. November 2013

folgender Vortrag gehalten:

Herr Dipl.-Math. Christian Himpe

Institute for Computational and Applied Mathematics
Westfälische Wilhelms-Universität Münster

Combined Reduction for Neural Networks

Zeit: 15:15 Uhr
Raum: K 503
Interessenten sind herzlich willkommen!

Abstract:
In the analysis and identification of brain dynamics large-scale parametrized neural network models are fit to match experimental measurements for example by electroencephalography. Due to the high-dimensional state space and even higher-dimensional parameter space of the underlying control system model, the estimation of the parameters is computationally costly. With combined reduction, both, the state and parameter space are reduced. The parameter reduction accelerates the optimization as less parameters need to be tuned to make the models output match the observations. The state reduction speeds up each integration of the model, additionally shorten the optimization process. Two methods for combined reduction are presented in this talk. First, an optimization-based method, which is very fast. Second, a gramian-based approach, that extends also to nonlinear models. Both methods are demonstrated and compared in a Bayesian inverse problem setting.

gez. Prof. Stefan Volkwein