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BAYREUTH, DEN 29. JUNI 2020

VORTRAGSANKÜNDIGUNG

Im Rahmen unseres gemeinsamen Oberseminars

„Numerische Mathematik, Optimierung und Dynamische Systeme“

spricht

Herr **Sungho Shin**, Doktorand am Department of Chemical and Biological Engineering, University of Wisconsin-Madison

am **Montag, 13. Juli 2020**, 16:00 Uhr über das Thema

"Exponential Decay of Sensitivity in Graph-Structured Nonlinear Programs"

Abstract:

In this talk, I will discuss solution sensitivity for nonlinear programs whose structure is induced by a graph. These graph-structured problems arise in applications such as optimal control, stochastic optimization, optimization with partial differential equations, and network optimization. I will show that the sensitivity of the primal-dual solution against a data perturbation is bounded by a term that decreases exponentially in the distance to the perturbation point. Remarkably, this result (which we call exponential decay of sensitivity) holds under fairly standard assumptions used in classical sensitivity theory: second-order sufficiency conditions, the linear independence constraint qualification, and strict complementarity. I will also present conditions under which the constants in the exponential estimate remain uniformly bounded; this allows us to characterize behavior for problems defined over infinite graphs (e.g., arising from the discretization of infinite-dimensional problems). Our results provide new insights on how perturbations propagate through graphs and on how the NLP formulation influences such propagation. In the later part of the talk, I will discuss applications of exponential decay of sensitivity in creating efficient computing strategies. In particular, the overlapping Schwarz decomposition method and diffusing-horizon model predictive control will be discussed.

Das Oberseminar findet über Zoom statt. Der Einwahllink ist <https://uni-bayreuth.zoom.us/j/97473999942?pwd=MHI1cHhvVXZGWGs4bE83bDI0Yk1SUT09>, die Meeting-ID lautet 974 7399 9942 mit Passwort 949549.

gez. Lars Grüne