

Seminar of the Chair of Optimization and Control
under prof. Stanisław Migórski
winter semester 2019-2020, Thursday, 10:15-11:45, room 1177

October 3, 2019

Anna Kulig, Optimization problems for elastic contact models with unilateral constraints

The talk was based on the paper:

Mircea Sofonea, Yi-bin Xiao and Maxime Couderc, Optimization problems for elastic contact models with unilateral constraints, 2019

October 10, 2019

Leszek Gasiński, Nonexistence and multiplicity of positive solutions for an equation with degenerate nonlocal diffusion

The talk was based on the paper:

L. Gasinski, J.R. Santos Junior, Multiplicity of positive solutions for an equation with degenerate nonlocal diffusion, Computers and Mathematics with Applications 78 (2019) 136143

October 17, 2019

Shengda Zeng, Constrained Variational and Hemivariational Inequalities with Applications

October 24, 2019

Anna Kulig, Optimization problems for elastic contact models with unilateral constraints, part 2

The talk was based on the paper:

Mircea Sofonea, Yi-bin Xiao and Maxime Couderc, Optimization problems for elastic contact models with unilateral constraints, 2019

November 7, 2019

Krzysztof Bartosz, Discontinuous virtual element method for a class of variational and hemivariational inequalities

The talk was based on the paper:

K. Bartosz, P. Szafraniec, Discontinuous virtual element method for a class of variational and hemivariational inequalities, in progress

November 14, 2019

Anna Kulig, Optimization problems for elastic contact models with unilateral constraints, part 3

The talk was based on the paper:

Mircea Sofonea, Yi-bin Xiao and Maxime Couderc, Optimization problems for elastic contact models with unilateral constraints, 2019

November 21, 28, 2019

Jarosław Duda, Overview of stochastic gradient descent methods - from 1st order to online saddle-free 2nd order

ABSTRACT: Neural network training requires optimization of a very large number of parameters, often in millions. It is usually based on gradients calculated from subsets of dataset - which can be seen as rough approximations of the real gradients, hence such optimization is referred as stochastic gradient descent. Improving its convergence translates into large savings. It is now dominated by heuristic first order methods - tracing only single direction, not trying to estimate distance from extrema. Second order methods could exploit these missed opportunities and there are now large efforts to get practical ones, however, they have many difficulties due to very high dimension, saddles and noisy gradients.

Slides: <https://www.dropbox.com/s/54v8cwqyp7uvddk/SGD.pdf>

December 5, 12 2019

Krzysztof Winowski, $S+$ property for divergence operator

January 9, 2020

Oleksandr Malakhov, Differential games

The talk will be based on the Chapter 6-th of: L. Evans, An Introduction To Mathematical Optimal Control Theory

January 16, 23, 2020

Anna Valette, Finite element method for a stationary Stokes hemivariational inequality with slip boundary condition

The talk will be based on:

Changjie Fang, Kenneth Czuprynski, Weimin Han, Xiaoliang Cheng and Xiaoxia Dai, Finite element method for a stationary Stokes hemivariational inequality with slip boundary condition IMA Journal of Numerical Analysis (2019) 00, 121, doi:10.1093/imanum/d

ABSTRACT: The article is devoted to the study of a hemivariational inequality problem for the stationary Stokes equations with a nonlinear slip boundary condition. The hemivariational inequality is formulated with the use of the generalized directional derivative and generalized gradient in the sense of Clarke. We provide an existence and uniqueness result for the hemivariational inequality. Then the finite element method will be applied to solve the hemivariational inequality.