SEMINARIUM ZESPOŁU MATEMATYKI OBLICZENIOWEJ

W dniu 14 maja 2019 r. (wtorek) o godz. 12:00
w sali 303 (w łączniku A3–A4)

prof. Jaroslaw Harezlak

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wygłosi referat pt.

Brain Connectivity-Informed Adaptive Regularization for Generalized Outcomes

Serdecznie zapraszamy!

Abstract: A challenging problem in the brain imaging research is a principled incorporation of information from different imaging modalities in regression models. Frequently, data from each modality is analyzed separately using, for instance, dimensionality reduction techniques, which result in a loss of information. We propose a novel regularization method, griPEER (generalized ridgified Partially Empirical Eigenvectors for Regression) to estimate the association between the brain structure features and a scalar outcome within the generalized linear regression framework. griPEER provides a principled approach to use external information from the structural brain connectivity to improve the regression coefficient estimation. Our proposal incorporates a penalty term, derived from the structural connectivity Laplacian matrix, in the penalized generalized linear regression. We address both theoretical and computational issues and show that our method is robust to the incomplete structural brain connectivity information. griPEER is evaluated via extensive simulation studies and it is applied in classification of the HIV+ and HIV– individuals.