

学习与逼近青年学者研讨会

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会务：雷冠杭 杨冉

2023年5月7日（周日） 腾讯会议号：750 516 256 密码：200433

9:00—10:00	报告人：成诚（中山大学） 题目：Graph Filters on Spatially Distributed Networks
10:00—11:00	报告人：高文武（安徽大学） 题目：Quasi-interpolation for Data Mining
11:00—11:30	咨询与讨论
14:00—15:00	报告人：胡婷（西安交通大学） 题目：Pairwise Learning Problems with Regularization Networks and Nystrom Subsampling Approach
15:00—16:00	报告人：焦雨领（武汉大学） 题目：Stochastic Interpolations, Lipschitz Mass Transportation and Generative Learning
16:00—16:30	咨询与讨论

报告摘要

报告人：成诚（中山大学）

题目：Graph Filters on Spatially Distributed Networks

摘要：Graph signal processing provides an innovative framework to process data on graphs. Graph filters and their inverses have been widely used in denoising, smoothing, sampling, interpolating and learning. Implementation of graph filter and its inverse filtering procedure on spatially distributed networks (SDNs) is a remarkable challenge, as each agent on an SDN is equipped with a data processing subsystem with limited capacity and a communication subsystem with confined range due to engineering limitations. In this talk, I will introduce the graph filter and the associated inverse filtering on a spatially distributed network. I will also introduce iterative distributed algorithms which are applicable for the implementation of inverse filtering on SDNs.

报告人：高文武（安徽大学）

题目：Quasi-interpolation for Data Mining

摘要：Quasi-interpolation has been a useful tool for data mining. In this talk, I shall introduce some recent developments of quasi-interpolation of our work team, including constructing kernels with higher-order generalized Strang-Fix conditions, meshless symplectic schemes for numerical solutions of partial differential equations based on quasi-interpolation, study and construction quasi-interpolation under the probabilistic numerical framework such as quasi-interpolation for irregularly spaced data, optimality and regularization properties of quasi-interpolation, and so on.

报告人：胡婷（西安交通大学）

题目：Pairwise Learning Problems with Regularization Networks and Nystrom Subsampling Approach

摘要：Pairwise learning usually refers to the learning problem that works with pairs of training samples, such as ranking, similarity and metric learning, and AUC maximization. To overcome the challenge of pairwise learning in the large scale computation, this paper introduces Nystrom sampling approach to the coefficient-based regularized pairwise algorithm in the context of kernel networks. Our theorems establish that the obtained Nystrom estimator achieves the minimax error over all estimators using the whole data provided that the subsampling level is not too small. We derive the function relation between the subsampling level and regularization parameter that guarantees computation cost reduction and asymptotic behaviors' optimality simultaneously. The Nystrom coefficient-based pairwise learning method does not require the kernel to be symmetric or positive semi-definite, which provides more flexibility and adaptivity in the learning process. We apply the method to the bipartite ranking problem, which improves the state-of-the-art theoretical results in previous works.

报告人：焦雨领（武汉大学）

题目：Stochastic Interpolations, Lipschitz Mass Transportation and Generative Learning

摘要：We construct a unit-time flow on the Euclidean space via stochastic interpolations, which unified recent ODE flows in generative learning. We study the well-posedness of the flow and establish the Lipschitz property of the flow map at time 1. We apply the Lipschitz mapping to several rich classes of probability measures on deriving functional inequalities with dimension-free constants, sampling and generative learning.