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Advances in Knowledge-Based Technologies

Proceedings of the Master and PhD Seminar Winter term 2018/2019, part 1

Softwarepark Hagenberg
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Program

Session 1. Chair: Susanne Saminger-Platz

10:00 W. Zellinger:
The Moment Adaptation Problem
10:30 P. Traxler:
Event Prediction using Perceptron Like Algorithms: First Insights/Results

The moment adaptation problem

Werner Zellinger, Bernhard A. Moser, Susanne Saminger-Platz

The performance of a discriminative model is analyzed that is evaluated on a future test sample with only finitely many moments similar to those of a prior training sample. A possible high difference between the sample's distributions is approached by considering the information encoded in the distributions in addition to the moments. The key tools developed for our analysis are bounds on the L^1-difference between smooth densities. For certain moment classes, the bounds are linear in terms of finitely many differences of (sample) moments with a bias depending on the entropy of the densities (and the sample size). Bounds on the generalization error of the discriminative model are derived and applied to the analysis of some recently proposed moment-based algorithms for domain adaptation.

Model combination for event time and event count prediction

Patrick Traxler

December 10, 2018

In this talk we give an introduction into predicting recurrent events. We present basic facts on how to predict event times and event counts given either a population of individuals, systems or if we observe only a single individual, system. For this problem setting, prediction algorithms compute and output probability distributions for the likelihood of when the next event occurrence happens (e.g. the survival function). We discuss basic simple linear regression in this context and also some first new results on model combination. Model combination refers to the problem of combining different probability distributions (e.g. survival functions) so that the combination is itself a probability distribution and improves w.r.t. to its prediction power over each single distribution. This talk is about work in progress.