



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Machine Learning and Statistics Seminar

Room 1 ,Ziskind Building
on Wednesday, Dec 14, 2016
at 11:15

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Technion

Online Learning with Feedback Graphs Without the Graphs

Abstract:

We study an online learning framework introduced by Mannor and Shamir (2011) in which the feedback is specified by a graph, in a setting where the graph may vary from round to round and is *never fully revealed* to the learner. We show a large gap between the adversarial and the stochastic cases. In the adversarial case, we prove that even for dense feedback graphs, the learner cannot improve upon a trivial regret bound obtained by ignoring any additional feedback besides her own loss. In contrast, in the stochastic case we give an algorithm that achieves $\tilde{\Theta}(\sqrt{\alpha T})$ regret over T rounds, provided that the independence numbers of the hidden feedback graphs are at most α . completely unlearnable. We also extend our results to a more general feedback model, in which the learner does not necessarily observe her own loss, and show that, even in simple cases, concealing the feedback graphs might render the problem unlearnable.