Introduction to Computational Learning Theory

Lecturer: Roi Livni
Teaching assistant: TBA
Office hours: can be coordinated by email
email: rlivni@tauex.tau.ac.il

The subjects that will be covered are contained in the following list

- Introduction.
- The Probably Approximately Correct (PAC) learning model.
- Learning Monomials and Decisions Lists.
- Occam's Razor and applications.
- The Vapnik Chervonenkis (VC) dimension.
- Agnostic learning.
- Learning Halfspaces.
- Learning Neural Networks.
- Hardness of learning.
- Weak Learning and Boosting.
- Learning in the online model.
- Learning Convex Losses
- Stochastic Gradient Descent/ Online Gradient Descent.
- Backpropogation

Books

- "Understanding Machine Leanring", by Shai Ben David and Shai Shalev-Shwartz.
- "Online Convex Optimization", by Elad Hazan.

Course Requirements

Homework assignments will be given about once every two weeks.Including programming exercises (python, Matlab etc...) The final grade will consists of: 15% homework and 85% percent final exam.