Machine Learning for Networking

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Lectures

- Lecture 1 - What is ML? Introduction to WiFi
- Lecture 2 - WiFi performance models I
- Seminar 1 - Analyzing a (WIFI) dataset (pdf, link to dataset)
- Lecture 3 - WiFi performance models II
- Lecture 4 - WiFi performance models III
- Lab 1 - AP selection using MABs: Scenario set-up
- Seminar 2 - Regression and decision tree models
- Lecture 5 - Are we lucky? Random exploration without learning
- Lecture 6 - Reinforcement Learning: states, actions and rewards
- Lecture 7 - Multi-armed bandits
- Lab 2 - AP selection using MABs: Hands on
- Seminar 3 - Classification models
- Lecture 8 - Multi-armed bandits - Creating a dataset using agents employing MABs?
- Lecture 9 - MDPs
- Lecture 10 - Q-learning I
- Lab 3 - AP selection using MABs: design your own MAB!
- Seminar 4 - Neural Networks
- Lecture 11 - Q-learning I and other state-based RL techniques
- Lecture 12 - IoT Data Analytics
- Lab 4 - Introduction to ThingSpeak
- Lab 5 - IoT Data collection and prediction using ThingSpeak
- Seminar 5 - Comparative of different prediction models
- Lab 6 - IoT Data collection and prediction using ThingSpeak

Evaluation

- Report seminars: 20 %
- Report Lab sessions 1-2-3: 20 %
- Report Lab sessions 4-5-6: 20 %
- Exam: 40 % (this is the only evaluation activity than can recovered in July)

Bibliography & Other resources

- They are provided in each lecture / seminar / lab.