Advanced Machine Learning, Autumn 2020

Term Projects

Guide Lines:

1. Each group should consist of at most 4 members.

2. The choice of topics and group composition has to be informed before October 5, 2020 in the shared google sheet

https://drive.google.com/file/d/1DC9iYd1V8NLv2XCScySGcEXenT0VFmFR/view?usp=sharing

3. Each group has to submit a report (as a single pdf file) on the project by November 20, 2020 in MS Teams.

4. Report should contain name and roll number of all group members, and the following sections – Introduction and Problem Definition, Literature Survey, Methodology, Experimental Results, Discussions and Future Work. No page restrictions.

5. For discussion mail me your queries.

In each of the projects topic you may choose a particular problem after a small literature survey. Also select a suitable data sets for experimental studies.

Broad Project Topics:

1. Gaussian Process Kernels: You can explore use of advanced GP kernels like spectral kernels. The goal of this project is to design tailor made kernels for the problem addressed.

2. Approximate inference in large Graphical Models. The goal of this project is to try a number of approximate inference methods in large graphical models.

3. Bayesian Optimization: Use the Bayesian learning paradigm for solving optimization problems. This is related to multi-armed bandit problems.

4. Deep Belief Networks

5. Bayesian Deep Learning algorithms

6. Using Bayesian machine learning for explainable AI

7. Discrete Latent models for text mining

8. Bayesian learning over graphs and network data

9. Sequence learning using probabilistic models

10. Fairness in probabilistic machine learning models

11. YOU MAY PROPOSE YOUR OWN TOPIC TOO!