Modelling and Analysis of Complex Networks

Exercise 9

Due: 13:00 on Nov. 29, 2024

The maximum score of this assignment is: **16 points**. Please submit the assignment in any readable data format (.txt, .doc, .pdf, .md ...) and submit the assignment before the deadline. If you have additional information concerning your answers, please also upload the document to the Moodle, or include the link to the document in your answers (e.g., link to your Github repository). Please indicate your team number in your submission.

We would like to perform machine learning on our datasets. Now let's turn to the Facebook-Ego dataset. The following question can be answered with the help of networkx and pytorch / sklearn. You may also use other packages to deal with the problem. Please answer the following questions on the networks you have and submit your executable code. **(16 points)**

We can predict links based on available features in the graph. Please randomly delete 10% of the edges in the graph, and use any features to train a conventional machine learning algorithm to predict the deleted edges. Please output a report of the prediction accuracy, AUROC, precision and ROC curve.