Thread: HL-MSc-8: Machine learning on social/biological networks for link prediction, community detection and visualisation

Haiping Lu 4 months ago

HL-MSc-8: Machine learning on social/biological networks for link prediction, community detection and visualisation

>>**The Project**

Data: Public social network data from Amazon, Facebook, Twitter, Wikipedia, Bitcoin, or public biological data for cancer diagnosis or drug discovery.

Background: Network data can help us better understand the interactions among people/genes for better business decision, policy making, health monitoring, and disease diagnosis/treatment. Such networks are often sparse and not fully connected. Link prediction is to predict the missing interactions between nodes (vertices). Also, we can often detect communities from such data to gain understanding for further actions such as marketing. Community detection is a typical clustering problem.

Tasks:

1) You will first implement existing machine learning method(s) to do link prediction, and/or cluster individual nodes into communities and visualise them, e.g., by following a paper or Github repository;

2) You will then have the freedom to develop your own method to improve the link prediction, detection and visualisation performance further.

>>**The Student**

1) If interested, please EMAIL me at h.lu@sheffield.ac.uk with your latest CV and a statement on why "this" project, highlighting your key interests and skills;

2) SINGLE student project, with collaborations to be encouraged when appropriate;

3) Suitable for all students (DA/ACS preferred) with strong data analytical skills, keen interest in research, and adequate background in mathematics, machine learning, and programming (Python or Matlab).

4) Prerequisite/Related module: COM6509 Machine Learning and Adaptive Intelligence or related courses taken.

>>**The Supervisor**

1) Dr Haiping Lu, Lecturer in Machine Learning. Check out http://www.dcs.shef.ac.uk/people/H.Lu

2) A meeting will be arranged in the week of 26 Nov - 30 Nov if you pass the preliminary screening.