

Network Science

Homework 2

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Timeline (1/2)

HW1

Due by 20th Dec 2019 (**+1 bonus**)

... or before the oral exam (no bonus in this case)

HW2

Due by 28th Jan 2020 (**+1 bonus**)

... or before the oral exam (no bonus in this case)

Interdisciplinary project

Due by 28th Jan 2020 (**+2 bonus**)

... or before the oral exam (no bonus in this case)

Timeline (2/2)

Oral exam

Oral presentation (slides) of HWs or IP
10 min presentation + 5 min for questions

Sessions (starting on)

30 Jan 2020, 14:00, classroom Ce

20 Feb 2020, 14:00, classroom Ce

2 July 2020, 14:00, classroom Ce

10 Sep 2020, 14:00, classroom Ce

Available in uniweb.unipd.it (registration starting 8th Dec)

Network systems 12 cfu – partial exam on Module B

Network science 6 cfu – full exam

Network science 9 cfu – full exam, same days, but including
written exercises on the spreading part

Homework 2

Homework 2 (1/4)

1. Choose your own dataset

- Can be the same of HW1
- or you can choose a new dataset which is better suited for the analysis



Homework 2 (2/4)

2. Extract relevant analytics

- Compute centrality/ranking measures (e.g. HITS and PageRank) and explain their outcomes
- Identify closeness/similarity between nodes (e.g., SimRank or Topic Specific PageRank)
- Identify communities through Girvan-Newman, Modularity, Spectral Clustering, PageRank-Nibble, Clique percolation, or BigCLAM
- Show that the communities you identified are significant, and possibly show their characteristics
- Apply link-prediction methods
- Overall, try doing something clever with your network!



Homework 2 (3/4)

3. Write a brief report

- 4/5 pages, written in English
- Include only relevant results, preferably graphically illustrated
- The report should be clear, complete, correct, concise and creative
- LaTeX typesetting is suggested (but you can use other)



Homework 2 (4/4)

4. Upload your work

- A text document (in pdf format)
- Supporting code files (use MatLab or any other programming language at your choice, e.g., Phyton) properly polished and commented
- Make sure that the code works in a completely autonomous way (no whatsoever manual intervention)
- Companion data in accessible format (e.g., the network data in a .mat or .txt file form)
- Upload the files in the elearning web site
(Homework 2: upload box)

Questions ?

