Potential Topics for SNA Final Projects

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About SNA Assignments

• Assignment 1 – it’s all basics
  – Focus on the basic models and properties about social networks, with the intention to familiar you with the area.

• Assignment 2 – let’s compete
  – Using a simple competition to get your hand dirty.
  – Reconsider: position vs. community analysis; homogeneous vs. heterogeneous social networks

• Assignment 3 – now it’s really about research
  – You will be working on something nobody has ever done before.
  – Paper publication is definitely possible if your idea is novel and reasonable.

• Final Project – Let’s work on something fun and challenging
  – 1+1+1 ≠ 3?
  – Since you are anyway doing this, why not making it a nice piece of work?
Potential Directions

• Heterogeneous Social Network Analysis
  – Community detection
  – Configuration model
  – Epidemic analysis

• Dynamic Social Network Analysis

• Learning for Social Networks
  – Predict links or node types

• Extracting Social Networks from the Web
Heterogeneous Social Network (HSN) Analysis – community detection

• Community Detection in HSN
• Position Analysis in HSN
• Similar to your homework 2, but this time without domain knowledge.
• Doing the above two at the same time.
Learning for HSN

• Prediction models for HSN
  – node types prediction
  – Predict the existence of links
  – Predict the link types

• Recommendation models for HSN
HSN Generation - Configuration Model

• Given the properties you have defined in homework 3. Can you design an HSN generation model that produces an HSN which possesses low average path length, high clustering coefficient, and follows certain given distribution (e.g. power law)?

• How nodes can be added/deleted in such model?
Process Models for HSN

• How ideas/information can be spread on an HSN (epidemic analysis)?
• How HSN can sustain attack (resilience)?
Dynamic Social Networks: Microblog

• Microblog such as Plurk and Twitter can be treated as a dynamic social network (i.e. social networks with time stamp on top of them)
• We will provide you a Plurk dataset (7 month)
• How can temporal information be utilized in the analysis?
  – Influence model
  – Community detection
  – Small world analysis
  – Many others
Identifying & Analyzed other Social Networks

• Other online social networks for analysis, e.g:
  – Facebook
  – PTT
  – Language Exchange Online Community

• What you will need to do
  – Extract them (through writing a crawler)
  – Analyze them (CC, small world, giant component, etc)
  – Identify certain interesting patterns if possible.
Final Project Proposal

• Due: 12/7 23:59.
• What to submit: PowerPoint slides (5 pages)
  – P1: The research statement (your goal) as well as the inputs and expected outputs.
  – P2: How the data or other resources are obtained?
  – P3-4: A rough guideline about your approaches
  – P5: each team members’ responsibility
• Final project presentation: 12/8 in the class
• Each team has 5 minutes + 1 min Q/A
• Welcome to talk to me if you need any suggestion.