Course Number: BIA658 WO Social Network Analytics

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Office Hours: By appointment
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Overview
This course introduces concepts and theories of social network and social media analyses. Application areas include customer profiling, community and trend detection, targeting, sentiment analysis, and development of recommendation systems.

In this course, students will:
- Master theories of social networks and social behavior
- Acquire techniques for analyzing social network data
- Apply analytical skills to social network data
- Apply social network analysis to marketing research

Learning Goals
After taking this course, students will be able to:
- Statistically analyze social networks
- Model the evolution of social networks
- Describe network properties
- Predict network behavior
- Help develop marketing strategies based on social network analysis

Pedagogy
The course will employ lectures, class discussion, and individual and team homework and projects. In addition to the written report, each student will present highlights of their final project to the class.

Required Readings
We will use articles as reading materials. Readings will be assigned for each week on Moodle. The following books are recommended:
Easley, D., & Kleinberg, J. (2010). Networks, crowds, and Markets; Reasoning about a highly connected world.

Assignments
1. Class Participation – Class participation includes class discussion.
2. Homework – Homework must be completed by the required date and submitted via Moodle.
3. Final Project – Final project includes a presentation and a project report.
The assignments and their weights are as shown below:

1. Class Participation 20%
2. Assignment 30% (each one for 10%)
3. Final Project 50%
TOTAL 100%

**Ethical Conduct**
The following statement is printed in the Stevens Graduate Catalog and applies to all students taking Stevens courses, on and off campus.
"Cheating during in-class tests or take-home examinations or homework is, of course, illegal and immoral. A Graduate Academic Evaluation Board exists to investigate academic improprieties, conduct hearings, and determine any necessary actions. The term ‘academic impropriety’ is meant to include, but is not limited to, cheating on homework, during in-class or take home examinations and plagiarism."
Consequences of academic impropriety are severe, ranging from receiving an "F" in a course, to a warning from the Dean of the Graduate School, which becomes a part of the permanent student record, to expulsion.
Consistent with the above statements, all homework exercises, tests and exams that are designated as individual assignments MUST contain the following signed statement before they can be accepted for grading:
I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination. I further pledge that I have not copied any material from a book, article, the Internet or any other source except where I have expressly cited the source. Signature __________ Date __________
Please note that assignments in this class may be submitted to www.turnitin.com, a web-based anti-plagiarism system, for an evaluation of their originality.

**Course/Teacher Evaluation**
Continuous improvement can only occur with feedback based on comprehensive and appropriate surveys. Your feedback is an important contributor to decisions to modify course content/pedagogy which is why we strive for 100% class participation in the survey.
All course teacher evaluations are conducted on-line. You will receive an e-mail one week prior to the end of the course informing you that the survey site (https://www.stevens.edu/assess) is open along with instructions for accessing the site. Login using your Campus Pipeline (email) 'CPIPE' username and password. This is the same username and password you use for WebCT. Simply click on the course that you wish to evaluate and enter the information. All responses are strictly anonymous. We especially encourage you to clarify your position on any of the questions and give explicit feedbacks on your overall evaluations in the section at the end of the formal survey which allows for written comments. We ask that you submit your survey prior to the last class.
## Course Schedule

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>topic</th>
<th>Assignment Post</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/26/14</td>
<td>Overview and goals</td>
<td>Install R</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6/2/14</td>
<td>Types of social networks: friend, user-generated content, affiliation, etc.</td>
<td>H1: Find your data for final project</td>
<td>6/08/14 11:59pm</td>
</tr>
<tr>
<td>3</td>
<td>6/9/14</td>
<td>(Monday Schedule) Graph visualization: nodes, edges, paths, centrality, cliques</td>
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<tr>
<td>4</td>
<td>6/16/14</td>
<td>Network relationships: ties, social capital, structural holes, structural balance</td>
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<tr>
<td>5</td>
<td>6/23/14</td>
<td>Network structures: equivalence, homophily, clustering, small world</td>
<td>H2: Visualize and describe data</td>
<td>6/29/14 11:59pm</td>
</tr>
<tr>
<td>6</td>
<td>6/30/14</td>
<td>(Wednesday Schedule) Network evolution: random graphs, preferential attachment, reciprocity</td>
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<tr>
<td>7</td>
<td>7/7/14</td>
<td>Diffusion in networks: information cascades, social influence, public opinion</td>
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<td>8</td>
<td>7/14/14</td>
<td>Descriptive modeling: community/anomaly detection (guest speaker)</td>
<td>H3: Progress report</td>
<td>7/20/14 11:59pm</td>
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<tr>
<td>9</td>
<td>7/21/14</td>
<td>Predictive modeling: link/attribute prediction</td>
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<tr>
<td>10</td>
<td>7/28/14</td>
<td>Marketing research: network data collection, sampling, hypothesis testing</td>
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<tr>
<td>11</td>
<td>8/4/14</td>
<td>Customer profiling: classification, predictive analysis using network data (guest speaker)</td>
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<tr>
<td>12</td>
<td>8/11/14</td>
<td>Trend: social influences on judgments, opinion spread, sentiment</td>
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<tr>
<td>13</td>
<td>8/18/14</td>
<td>Project Q&amp;A</td>
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<tr>
<td>14</td>
<td>8/25/14</td>
<td>Presentation</td>
<td>Final presentation &amp; report</td>
<td>8/30/14 11:59pm</td>
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This course is designed based on the original version of Dr. Yasuaki Sakamoto.