COURSE SYLLABUS

Course Objectives and Description: This course provides both the foundation and knowledge of analytics research. It examines the research directions and methodologies in the area of data mining and analytics. Students are expected to gain a thorough understanding of both traditional and new data mining methods, learn their applications in various problem domains, and know the challenges in these research areas.

This is a PhD level seminar course. The course is structured around extensive reading and discussion of the research literature on the analytics field. Active in-class and after-class participation is essential. Students are expected to prepare assigned readings carefully and participate in class discussions actively.

Required Readings: Each week, students are expected to read journal articles related to the specific topic. Please see schedule for the full list of articles in each topic.

Grading Policy: Course grades will be based upon the following weights. No late submission is accepted.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course participation</td>
<td>20%</td>
</tr>
<tr>
<td>Dissertation report</td>
<td>30%</td>
</tr>
<tr>
<td>Term Paper</td>
<td>50%</td>
</tr>
</tbody>
</table>

Course Participation: Each student is expected to read all papers listed in the weekly readings before class and be ready to discuss all of them. Each student is expected to summarize one paper in a reflection report and present it in class. Other students are expected to be discussants and participate in the critical evaluations.

Dissertation report: Each student is expected to find one recent IS doctoral dissertation paper in data analytics area. The student should analyze the dissertation and present the findings in one written report and one oral presentation. The report is expected to contain: 1) A summary of the dissertation; 2) An analysis of the dissertation; 3) A possible extension of the dissertation.

Term paper: Throughout the semester, each student should develop a research proposal in the data analytics area. Students could choose a research question they are interested, prepare the literature review, write about how they would study that problem and design the research methods. The proposal should also include the discussion about future work and the analysis of potential limitations. Each student is expected to present the proposal and submit a written paper in the last week.
Tentative Weekly Schedule

The following is a tentative plan of the topics and the corresponding readings for each week, subject to revision as opportunities arise.

Week 1 (08/26): Introduction & Data Acquisition


Week 2 (09/09): Classification and regression I


Week 3 (09/16): Classification and regression II


**Week 4 (09/23): Performance evaluation and challenges**


**Week 5 (09/30): Unsupervised learning**


**Week 6 (10/07): Network**


**Week 7 (10/14): Text analytics I**


**Week 8 (10/21): Text analytics II**


**Week 9 (10/28): Recommender systems and online feedback mechanism**


**Week 10 (11/04): Temporal analysis**


**Week 11 (11/11): Anomaly detection**


**Week 12 (11/18): Artificial intelligence**


**Weekly 13 (12/02): Dissertation report presentation and feedback**

**Weekly 14 (12/09): Proposal presentation and feedback**