

# *Reaction Paper, CS 6241 Spring 2019*

*Instructor: Austin R. Benson*

*Due Thursday March 28, 2019 at 11:59pm ET*

## ASSIGNMENT

The goal of this assignment is to get you thinking about research related to the ideas in the course, to stimulate ideas for final projects, and to provide additional preparation for the final project in the form of critical analysis of research papers.

The assignment is a *reaction paper* where you write a short (approximately 5-page) report that discusses, analyzes, and criticizes at least two papers related to the course material. You can work in groups of size 1, 2, or 3 for this assignment. The group does not have to be the same as the one for your final project.

### *Paper selection*

Select at least two papers related to the course material (broadly construed). The papers do not have to be developing numerical methods; instead, they could be applying numerical methods to a particular domain in which you are interested. That being said, try to select at least one recent paper (say, from the last 5 years). For example, we went through ISOMAP<sup>1</sup> and LLE<sup>2</sup> in the lecture on nonlinear dimensionality reduction, but there have been a number of related techniques developed since the associated foundational papers for these methods were published.<sup>3</sup> Remember that one of the goals here is to help you think about ideas for your final project, which is a research project.

### *Reaction paper*

Write an approximately 5-page “reaction paper” to the papers you select. Your reaction paper should (i) summarize the technical contributions of the papers you selected; (ii) explain how the papers are interesting and related to the course; and (iii) critically analyze the papers. Here are some questions to help get you started with critical analysis: What are the limitations or weaknesses of the research and how could these be resolved or improved? How could the research be extended? Are there particular domains or datasets where the approaches would work well or work poorly?

<sup>1</sup>J. B. Tenenbaum, V. de Silva, and J. C. Langford. A global geometric framework for nonlinear dimensionality reduction. *Science*, 2000.

<sup>2</sup>S. T. Roweis and L. K. Saul. Nonlinear dimensionality reduction by locally linear embedding. *Science*, 2000.

<sup>3</sup>[https://en.wikipedia.org/wiki/Nonlinear\\_dimensionality\\_reduction](https://en.wikipedia.org/wiki/Nonlinear_dimensionality_reduction)

## PREPARATION & SUBMISSION GUIDELINES

**Typesetting.** Your reaction paper should be prepared with a proper typesetting tool (namely,  $\text{\LaTeX}$  ).

**Collaboration.** *You can work on and submit your reaction paper as a team of size 1, 2, or 3.* Your team does not need to be the same as for your final project, but it can be. Please submit one reaction paper per team but include all of the team member names and NetIDs on the submission.

**Academic Integrity.** I expect you to maintain academic integrity in the course. Failure to maintain academic integrity will be penalized severely. Plagiarism is a form of academic misconduct, so make sure to provide proper citations. Cornell has a number of guidelines on plagiarism.<sup>4</sup>

<sup>4</sup><https://plagiarism.arts.cornell.edu/tutorial/index.cfm>

**Submission.** Your approximately 5-page reaction paper should be submitted as a single PDF and include the names and NetIDs of the members of your team (only one team member needs to submit). Your submission should also clearly state the papers to which you are reacting.

Submit your PDF on CMS.<sup>5</sup>

<sup>5</sup><https://cmsx.cs.cornell.edu>