

## **ECE 6970 – Final Project**

### **General Instructions:**

- There are three main options for the final project as delineated below.
- The project is performed in pairs (exceptions only with instructor's permission).
- Project choices should be emailed to course instructor ([goldfeld@cornell.edu](mailto:goldfeld@cornell.edu)) by Tuesday, November 19<sup>th</sup>, at 8pm.
- Topic approval by course instructor is mandatory – projects without approval will not be accepted.
- Kick-off meetings will be set starting from next week (Monday, December 18<sup>th</sup>, and forward).
- Submission of final reports is due to the end of the semester.
- Projects will be presented in 10min slots during Thursday (December 5<sup>th</sup>) and Tuesday (December 10<sup>th</sup>) lectures.

### **Project Options and Further Instructions:**

#### 1) Theoretical Research Task:

- a. During the kick-off meeting: Pose a research question and set goals (can be based on paper or otherwise), motivate it and provide a clear mathematical statement you would like to prove.
- b. Make an honest attempt at solving the posed problem.
- c. Summarize your work in a report, describing the motivation, scientific background, problem setup and definitions, results, proofs, and conclusions.
  - The summary should be about 5 single-column pages long, written as a short conference paper with all the appropriate content.

#### 2) Implementation/Design Task:

- a. During the kick-off meeting: Propose empirical study and motivate it. Provide a clear mathematical formulation of the system to be implemented and describe research plan.
- b. Conduct the empirical study and produce comprehensive results.
- c. Summarize your work in a report, describing the motivation, scientific background, problem setup and algorithm, implementation, results, and conclusions
  - The summary should be about 5 single-column pages long, written as a short conference paper with all the appropriate content.

#### 3) Critical Summary:

- a. Select a paper related to topics studied in class and prepare a critical summary.
- b. The critical summary should not be more than 5 pages long.
- c. The structure has two parts (roughly equal in size):

- i. **Part I:** Summary of the paper including, problem statement, motivation, results, techniques used (for proofs, implementation or otherwise), conclusions and impact.
- ii. **Part II:** Your own comments and observations. Provide:
  - Comments on technical level, correctness, degree of innovation/novelty.
  - Relation to previous works and role in scientific progress on the topic.
  - Interpretation of the results and insight.
  - Suggestions on improvement or generalization of the results, and potential followup studies.
  - Relation to material studies in class.