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Student ID: 1716248

Name: John M Maloney

Academic term: Spring 2016

Course Number and Credits: CSCI 8994: Directed Research, 2 cr.

Grading Basis: (•) A/F ( ) S/N

Note: **4994H** *must* be taken A/F, **5996** and **8760** *must* be taken S/N

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Description of proposed class:

I proposed to extend some research in the area of public goods games that was completed during the previous semester. Some potential research topics include the following:

1. Richer reputation assessment rules - In my previous project, only the last action taken by an agent was considered when assessing the agent's reputation. It might be better to consider the agent's last N actions when assessing its reputation.

2. Voluntary association - In my previous project, agents were randomly assigned to groups. It would be interesting to consider the case where agents self organize into groups.

3. Partial information about reputations - In my previous project, all agents had access to information about the actions taken by all other agents. It would be interesting to consider the case where agents only have partial information about the actions taken by other agents.

4. Economies of scale - In my previous project, the multiplicative factor that is used to multiply the contributions was fixed. It would be interesting to consider the case where the multiplicative factor varied based on group size. This would model the increasing returns that often accompany group activities.

5. Exploration/exploitation trade-off - Combining items 2, 3 and 4 might provide an interesting platform for investigating strategies that agents could use to trade off exploitation of current knowledge and exploring to discover new

information.

6. Evolution of strategies - In my previous project, a fixed set of fully developed strategies were evaluated. This begs the question of how the strategies came to be in the first place. It would be interesting to consider the case where strategies evolve from a initial state consisting of agents following "randomly generated primitive strategies".

Enter CS username of the Professor who will be approving this request:

gini @cs.umn.edu