**Project Plan: Agent-Based Modelling of Economic Systems**

Fall 2019 – Spring 2020

*Research Team*

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*Learning Goals*

**Broad goals for the Aresty Research Assistant Program**

* Develop general collaborative and problem-solving skills in a research environment
* Acquire soft skills relating to presentation and learn how to properly present research depending on the audience
* Become acquainted with the casual research environment and gain exposure to a variety of research-related activities and behaviors

**Specific Goals for this Project**

* Gain specific technical skills related to experiment design and economic analysis
* Examine different models that can help to explore the nature of intertemporal and risk preferences.
* Develop multiple research experiments to explore decision making when subjects experience different types of growth rates, different timing of payoffs, and uncertainty.
* Perform analysis and generate results based upon the performance of agents in the experiment.
* Analyze agent’s nature of risk taking by looking at factors like initial wealth and the distribution of possible gains.
* Experimentally evaluate whether said models can successfully emulate human behavior
* Construct computer “bots” to further investigate possible strategies for survival in various economic environments.

*Description of Project*

“Ergodicity Economics” refers to the study of behavior and decision making in circumstances where time averages of outcomes are comparable to point-in-time averages. Consideration of such environments has led scholars to suggest a model for human behavior in which agents maximize the growth rate of their wealth growth, in contrast to the traditional economic postulate of utility or profit maximization. This project seeks to find empirical evidence for (or against) this proposition and to explore further nuances of the basic hypothesis. Questionnaires and online games designed to allow for observations on human decisions with respect to both deterministic and nondeterministic payoffs over time will be used in this effort.

*Student Responsibilities (minimum 5 hours per week)*

In addition to weekly meetings with our faculty mentor, our responsibilities vary depending on what stage of the project we are in. Specific assigned responsibilities will depend on the stage of the project; such responsibilities include reading papers, analyzing models, generating possible experiments, evaluating results, poster design, and more.

*Required Readings and Meeting Schedule*

The entire group will meet once a week, plus additional meetings when necessary.

* Readings are put on the project’s Sakai site, and they are assigned and expected to be read by the next weekly meeting date
* In Fall 2019, we will meet on Tuesdays from 4:15 PM to however long we need (usually ~5:00 PM)
* In Spring 2020, we will decide on a weekly meeting time after Spring semester schedules are created and finalized