Stevens Institute of Technology

SYS-611 Term Project

Due Dec. 16 2019

Submit the following using the online submission system: 1) Written report in PDF format.

This project applies a simulation approach from this course (Monte Carlo, Discrete Event, or Agent-based Model) to a problem in your own domain of interest. This is an **individual** or **pair** assignment (work alone or with a partner). Appropriate topics exhibit a similar level of complexity as a homework problem and demand more than 40 hours of effort per person.

Do not pursue a thesis-type problem. Developing a new model is time-intensive and the objective of this project is to demonstrate mastery of course material in a new problem of your own formulation *including validation*. Consider problems in your local environment (e.g. elevators, cafés, public transportation systems) to ease data collection and validation. A small (but not trivial) problem is OK to demonstrate the methods from this course.

The project must have the following components, weighted as follows:

1. **Introduction [30 points]** – Identify and formulate the problem.
   (a) Define the study objectives [10 points] – What **decision** should be made?
   (b) Define the system boundary [10 points] – What is fixed and what is variable?
   (c) Identify key performance measures [10 points] – How is a good solution identified?
2. **Modeling Approach [80 points]** – Develop, describe, and document your model.
   (a) Collect and process real data [30 points] – Observe new data or use existing data.
   (b) Formulate and develop model [30 points] – Monte Carlo, Discrete Event, or Agent-based.
   (c) Validate and document model [20 points] – Compare with collected data.
3. **Results and Analysis [40 points]** – Perform the analysis and present your results.
   (a) Study design and conditions [10 points] – Capable of searching solution space.
   (b) Execute study and present/interpret results [30 points] – With text and figures.
4. **Discussion and Conclusion [30 points]** – Discuss the meaning and significance of results and make final recommendations for further courses of action.
5. **Formatting, Readability, and Style [20 points]** – Overall report quality.

The project deliverable is a final report in PDF format, **6–8 compact pages** with figures and references. All reports must be submitted online before 11:59pm on Monday, December 16, 2019. Submissions may be checked for plagiarism using automated detection software.