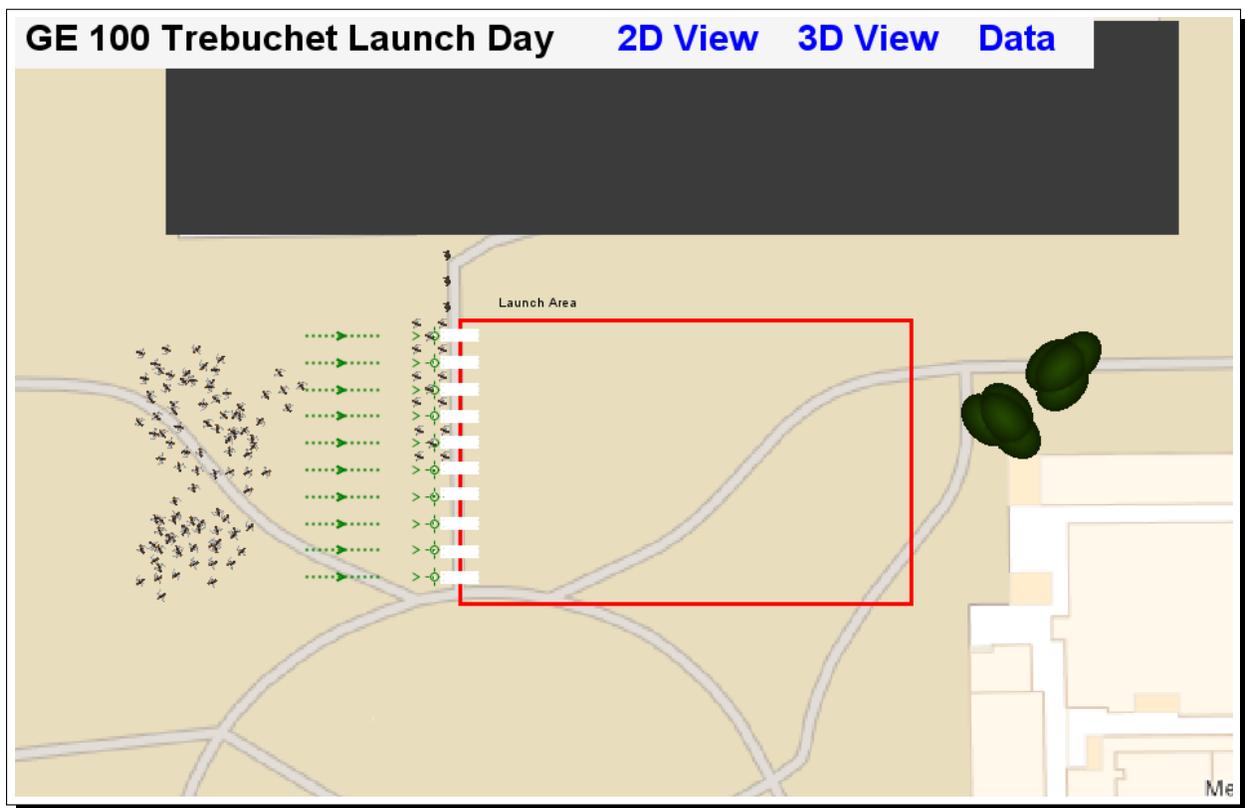




# AnyLogic Trebuchet Model

GE100 Introduction to ISE

October 15, 2014



Your assignment is to use the ANYLOGIC™ trebuchet launch model to find a design that improves efficiency and throughput in launching the trebuchets.

After watching the model demonstration at the beginning of this lab session, please complete the following tasks by yourself as a homework assignment. Submit this assignment in Canvas. Please read all instructions before getting started.

## 1. How to Use this Document

- Red underlines in the digital PDF are hyperlinks to locations in the PDF or website. You can link these to jump to the hyperlinked location. The example here goes to the figure on the first page: [Click Me](#)

## 2. Using the Computer Model

### GE 100 Trebuchet Activity Simulation

Adjust the input parameters to see how the output data changes.

Number of teams  1 23 30

Number of stations  1 10 10

Protocol  Assigned Stations  
 Random Stations  
 Shortest Queue

Number of adjustments allowed  0 1 3

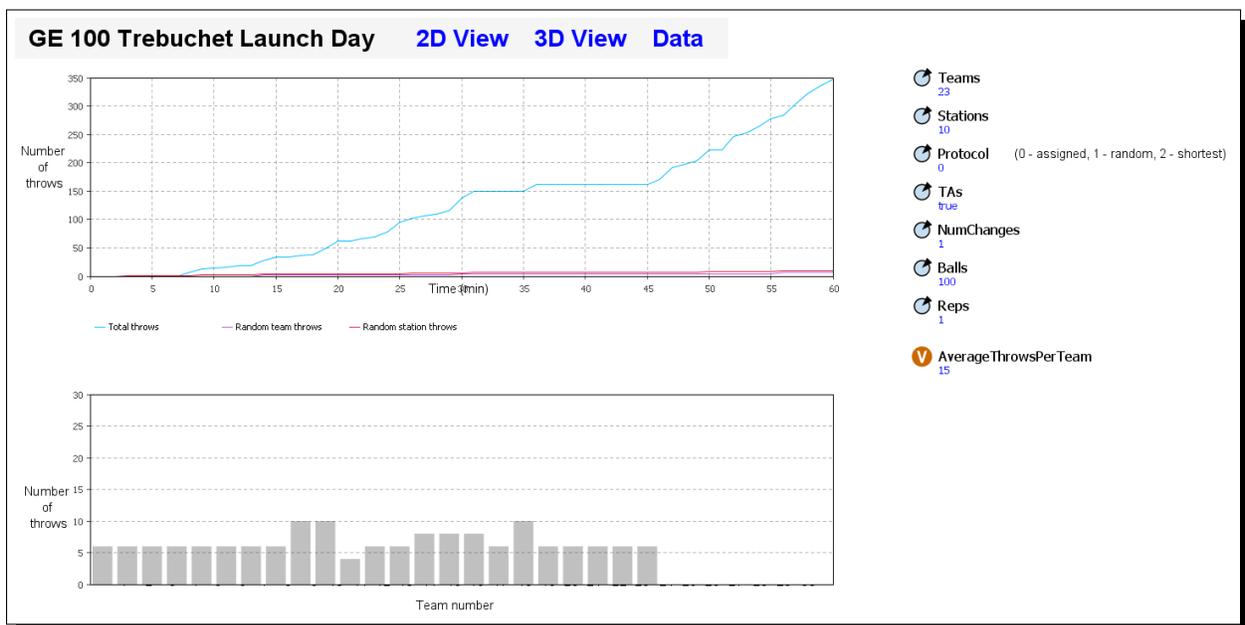
TA station

Number of throws per entry  1 1 3

Number of balls  40 100 100

1. Open the simulation at [www.runthemodel.com/models/1828](http://www.runthemodel.com/models/1828)
2. Click "run the model" and answer affirmatively to all security prompts.
3. Adjust the input parameters
  - (a) Number of teams - There are 23 teams. Drag the slider to the correct position so that the number in red shows '23'.

- (b) Number of stations - Due to space constraints, a maximum of 10 stations is allowed. Drag the slider to change the number of stations allowed in the simulation.
- (c) Protocol - Choose how teams move through the system.
- Assigned Stations - Each team is assigned a station. They rotate with other teams assigned to the same station.
  - Random Stations - Teams join a randomly selected queue.
  - Shortest Queue - When teams are ready, they join the station with the shortest line.
- (d) Number of adjustments allowed - How many adjustments can students fire at the launch pad?
- (e) Number of throws per entry - How many throws are students allowed to perform each time? **Note:** The total number of throws a team can perform depends on the number of adjustments allowed and the number of throws per entry. For example, a team allowed 2 throws per entry and 3 adjustments would have a total of 6 throws.
- (f) TA stations - Do students have to report to a TA before approaching the launch stations? Check the box accordingly.
- (g) Number of balls - Drag the slider to choose the number of balls allowed in the system. This affects the frequency of ball collection. More balls means fewer pauses for ball collection.
4. Run the model by clicking 'Run'.
5. The default view is the 2D view shown on the first page. Switch to a different view using the tabs at the top. The data view (below) shows the number of throws achieved by each team as well as the input parameter values selected at the beginning of the simulation. **Note:** The 3D view does not work on Mac computers.



### 3. Completing the Assignment

Several experiments are predefined for you below. Please run the prescribed experiments and record the results in the blanks provided. Keep the number of teams set at 23, the number of stations set at 10, and the number of balls at 100. Space is also provided for you to conduct your own experiments and record those results.

Protocol	Number of adjustments	Throws per entry	TA station	Avg throws /team	Most /team	Fewest /team
Assigned	2	2	Y	_____	_____	_____
Random	2	2	Y	_____	_____	_____
Shortest	2	2	Y	_____	_____	_____
_____	0	2	Y	_____	_____	_____
_____	1	2	Y	_____	_____	_____
_____	3	2	Y	_____	_____	_____
_____	_____	1	Y	_____	_____	_____
_____	_____	3	Y	_____	_____	_____
_____	_____	_____	N	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

In your opinion, what plan works the best? Why?

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When you're done with this table, scan this sheet and submit it to Canvas.