

# Space Invaders Lag Study

[Michael.long@usask.ca](mailto:Michael.long@usask.ca)

(306) 380-3380

## Setting up the environment

- Make sure the computer and monitor are both on and logged in
- Test if both keyboard and red MSI gaming mouse are working
- Make sure the .exe runs and is the correct resolution
- Have the reaction speed test open the browser

## The participant arrives

Explain that you will be playing a game like Space Invaders for ~20 minutes.

Have them fill out the consent form, offer them a copy of the consent form (they probably won't take it)

Have them fill out the honorarium form

## Pre-game questions

- How old are you?
- Gender?
- Occupation?
- Left or right-handed? Ambidextrous?
- What hand do you use a computer mouse with?
- On an average week, how many hours of videogames do you play?
  - If they do play videogames...
    - What genres of games do you play?
    - Do you play any games requiring a quick reaction time, such as first-person shooters?
- Have you experienced lag when playing videogames? (Such as online gaming, using a slow computer, etc.)
- In what situations has lag been a problem?
- How do you deal with lag when you play with videogames?

Have them do this reaction speed test twice: <https://www.humanbenchmark.com/tests/reactiontime>

Record both averages (smaller number on the screen)

## The game

Launch the .exe

Enter the participants unique participant ID

Explain the game:

The player moves with the mouse. You want to avoid incoming RED bullets WHILST shooting the enemy invaders at the top of the screen. Left click or hold down the LEFT MOUSE button to shoot bullets. When you get hit by an enemy bullet you will be unable to shoot for half a second. The game will get harder as you play. There will be a practice round when the game gets harder. Data from practice rounds is not recorded. There will sometimes be a delay when moving your player model. The practice rounds have no delay. After each round the game will prompt the user to answer some questions, which are answered using the number keys. Feel free to take a break for as long as you like while answering these in-game survey questions.

Press spacebar when player is ready

Game will play like this: Practice round (0ms of lag), 0ms of lag, 100ms, 200ms, 300ms, 400ms, break. Repeat this cycle 4 times, with the enemy bullet speed increasing each time.

## Post-game questions

- Were you looking at the top half of the screen, or the bottom half most of the time?
- Were you focussing more on dodging red bullets, or shooting the invaders?
- Did you have strategies for playing the game in general?
- Did you have any strategies for when the lag when moving your player become too high?

## Cleanup

- Note down any unusual findings/remarks from participant
- Did anything go wrong while running this participant? Note anything down
- Copy and paste the Invaders.csv file found in the MultiInputPong\_Data folder onto the provided USB stick just in case
- Close and start the game back up (just in case)

If something unexpected happens during the study, feel free to come find me at my desk