

# Cross Cultural SOP

## Standard Operating Procedure

### Abstract

In this document we describe how to use the XC simulator version 2.0.

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# 1 PREPARATION

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## INSTALL SIMULATOR (IF NEW BUILD)

Download Build from Github .....	SEE APPENDIX <b>LATEST BUILD</b>
- ASSETS: <i>XCServerBuildVX-X-X-betaX.zip</i>	
UnZip Windows Application downloaded from Github .....	
- Create a shortcut to the data on the Alienware laptop:	
<i>C:\Users\<b>USER NAME</b>\AppData\LocalLow\FarLab\XCDriving</i>	
<b>DELETE</b> folder <i>QN Updates</i> .....	
- Start the App and Allow Network connectivity in pop-up	
- Start As Server	
<hr/>	
Set Oculus Quest into developer mode .....	
UnInstall previous version .....	OCULOUS DEVELOPER HUB
Install updated APK .....	OCULOUS DEVELOPER HUB

## STUDY PREPERATION

Charge Headset .....	USB-C
Charge GoPro .....	USB-C
<hr/>	
Connect Steering wheel .....	POWER & USB
<b>Logitech G HUB (G logo)</b> .....	START-UP
<b>Oculus Developer Hub (oculus logo)</b> .....	START-UP
Start Oculus Quest (press button on headset) .....	
Calibrate Oculus Quest (crossing arrows in the chair in the headset) .....	FACING FORWARD
Position GoPro .....	BOTH PARTICIPANTS VISIBLE
<hr/>	
Start Windows Server: "XCDriving.exe" in downloaded build .....	HOLD AT VIRTUAL WAITING ROOM
- Start server in upper left corner	
- You will see ABCDEF on the upper left corner, click A, press the button on the steering wheel, click B, press the button on the steering wheel, and then match the red and blue headset with A (left) and B (right) consistently	
Start Quest App .....	
- Verify IP Address	
- Verify Participant order	
- Verify Language	
- Connect To Server	
Associate Steering-wheel .....	
- On Server: Press Participant order for association	
- On Steering-wheel press Big-Return (with Red-Outline)	

## 2 EXPERIMENT

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### PRE-EXPERIMENT

**Participant Introduction** ..... READ

- Welcome TEXT

Consent Form .....

- FormLink

Demographic Form .....

- Demographic FormLink

Start Recording GoPro .....

**Participant Interface explanation** ..... READ

Hand Participants Headset ..... ALCOHOL-WIPES

- **Instruct:** Participant clean headset.
- **Show:** How To adjust head strap and correct seating.
- **Verify:** They see their car.

Calibration .....

- **Instruct:** Look straight forward.
- **Instruct:** Hold the hands on the steering wheel.
- **Press:** Calibration Buttons (A&B)
- **Wait** for calibration to finish (5 sec.)
- **Verify:** with participant.

Start Practice ..... MAX. 5 MIN.

- **Wait** 5 min
- Start questionnaire **CTRL +Q**

### EXPERIMENT

Latin Square .....

- Determine and Mark pair-number

Load Next Scenario ..... 18 TIMES

- **Instruct:** Scenario number out of 18
- **Monitor:** Participant comfort
- **Monitor:** Scenario duration
- **Note:** particular behaviors

Auto-confrontation .....

- **Show:** the replay of each scenario
- **Talk:** through the scenarios

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## SIMULATOR SHORTCUTS

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Start <b>Questionnaire:</b> .....	SHIFT+Q
Start <b>Waiting Room:</b> .....	SHIFT+W
Set-To <b>Drive:</b> .....	SHIFT+D
Camera Control .....	0,1-4
Reset player <b>A</b> to spawn position .....	CTRL+SPACE+A
Reset player <b>B</b> to spawn position .....	CTRL+SPACE+B
<ul style="list-style-type: none"> <li>- <b>1</b> Focus on Participant A view.</li> <li>- <b>2</b> Focus on Participant B view.</li> <li>- <b>3</b> Focus on intersection view.</li> <li>- <b>4</b> Focus on Adjustable view.</li> <li>- <b>0</b> Quad View</li> </ul>	

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## TROUBLE SHOOTING

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Steering-wheel .....	
<ul style="list-style-type: none"> <li>- Ensure the Steering-Wheel is plugged in to power.</li> <li>- Re-plug the USB - cable</li> <li>- Ensure that the cables in the bottom of the steering wheel are properly connected.</li> </ul>	

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## POST-EXPERIMENT

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GoPro .....	STOP RECORDING
Data Backup .....	LOCALLY AND COMBINE.TECH.CORNELL.EDU
<ul style="list-style-type: none"> <li>- GoPro.mp4</li> <li>- Audio Recording.mp3</li> <li>- ReRun Data .replay</li> <li>- SA VRQN Data .json</li> <li>- Questionnaire (demographics).csv</li> <li>- Time series data .csv</li> </ul>	
Consent-Form .....	ARCHIVE
Oculus Quest .....	RECHARGE
GoPro .....	RECHARGE AND EMPTY STORAGE
Audio Recorder .....	RECHARGE AND EMPTY STORAGE
Alcohol whip .....	
<ul style="list-style-type: none"> <li>- Oculus Quest</li> <li>- Steering wheel</li> </ul>	

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### 3 READ TEXT

#### 3.1 PARTICIPANT INTRODUCTION

"Welcome to our study on driving simulations. We're interested in how people drive in our virtual reality driving environment. First, we will have you fill out a consent form."

*Distribute form.*

"By signing this consent form you have agreed to be audio- and video-recorded, and you are aware that the driving simulator could be stressful. If you need to drink, have a rest, or anything else during the study, please let me know. After you finish each scenario, we will ask you how you feel. Remember, you can stop at any time. You will get \$15 Amazon Gift card after the study. If you get nauseous, we have things like ginger candies to soothe the nausea."

#### 3.2 PARTICIPANT INTERFACE EXPLANATION

"You will be driving in our VR simulator. Please drive as if you are driving in the real world. You will control your virtual car with this steering wheel."

*Points to the steering wheel.*

"You can honk using the top two blue buttons on the steering wheel."

*Points to the steering wheel buttons.*

"Pressing on the shift levers behind the wheels will indicate turn signals."

*Points to shift levers behind steering wheel.*

"You can click both levers simultaneously in order to turn on your hazard lights."

*Points to shift levers behind steering wheel.*

"Your hands and head position will be tracked and used in the virtual environment. You will control the car's speed with these pedals."

*Points to both sets of pedals.*

"The middle pedal is the break and the right pedal is the accelerator. The left pedal does nothing. You can press the top blue buttons to honk."

*Points to the top blue buttons.*

"There will be a screen in the car giving you navigation instructions. Any questions?"

"Throughout the study, the VR system will ask you a series of questions about various interactions that took place. Before this happens, you will be instructed to come to a halt. Once the other participant is ready too, the questions will appear right in front of you. Select any option by looking at the related answer box and confirming with a press on the round steering wheel button."

*Points to the round steering wheel button*

You will see a cursor in order to select an answer. Sometimes, the other participant may finish after you, and you will need to wait in the driving environment."

"Please do not speak to each other. Other forms of communication are allowed. "

"Do you have any questions?"

### 4 SCENARIO

"The driving scenario will begin now"

*Researcher waits for scenario to finish.*

"Are you feeling okay?"

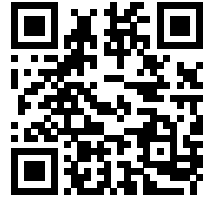
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Pair #2:	CP2	CP3	CP1	CP4	NSI3-CB	CP5	NSI2-CB	CP6	NSI1-CB	CP7	NI2-CB	CP8	NI1-CB	NI1	NSI3	NI2	NSI2	NSI1
Pair #3:	CP3	CP4	CP2	CP5	CP1	CP6	NSI3-CB	CP7	NSI2-CB	CP8	NSI1-CB	NI1	NI2-CB	NI2	NSI3	NI2	NSI3	NSI2
Pair #4:	CP4	CP5	CP3	CP6	CP2	CP7	CP1	CP8	NSI3-CB	NI1	NSI2-CB	NSI1	NSI3-CB	NSI2	NSI1-CB	NSI2	NSI3	NSI2
Pair #5:	CP5	CP6	CP4	CP7	CP3	CP8	CP2	NI1	CP1	NI2	NSI3-CB	CP2	NSI2-CB	NSI2	NSI1-CB	NSI3	NI2-CB	NI1-CB
Pair #6:	CP6	CP7	CP5	CP8	CP4	NI1	CP3	NI2	CP2	NSI1	CP1	NSI2	NSI3-CB	NSI3	NSI2-CB	NI1-CB	NSI2-CB	NSI1-CB
Pair #7:	CP7	CP8	CP6	NI1	CP5	CP2	CP4	NSI1	CP3	NSI2	CP2	NSI3	CP1	NI1-CB	NSI3-CB	NI2-CB	NSI2-CB	NSI1-CB
Pair #8:	CP8	NI1	CP7	NI2	CP6	CP7	CP5	CP6	CP4	NSI3	NI1-CB	NSI3	CP2	NI2-CB	CP1	NSI1-CB	NSI3-CB	NSI2-CB
Pair #9:	NI1	NI2	CP8	NSI1	CP7	NSI2	CP6	NSI3	CP5	NSI2	NI2-CB	NI2-CB	CP3	NSI1-CB	CP2	NSI2-CB	CP1	NSI3-CB
Pair #10:	NI2	NSI1	NI1	NSI2	CP8	NSI3	CP7	NSI3	CP6	NSI1-CB	CP5	NSI2-CB	CP4	NSI2-CB	CP3	NSI3-CB	CP2	CP1
Pair #11:	NSI1	NSI2	NI2	NSI3	NI1	NI2-CB	CP8	NI1-CB	CP7	NSI2-CB	CP6	NSI2-CB	CP5	NSI3-CB	CP4	CP1	CP3	CP2
Pair #12:	NSI2	NSI3	NSI1	NI1-CB	NI2	NSI1-CB	NI1	NSI2-CB	CP8	NSI3-CB	CP7	NSI3-CB	CP6	CP1	CP5	CP2	CP4	CP3
Pair #13:	NSI3	NI1-CB	NSI2	NI2-CB	NSI1	NSI1-CB	NI2	NSI2-CB	NI1	NSI3-CB	CP8	CP1	CP7	CP2	CP6	CP3	CP5	CP4
Pair #14:	NI1-CB	NI2-CB	NSI3	NSI1-CB	NSI2	NSI2-CB	NSI1	NSI3-CB	NI2	CP1	NI1	CP2	CP8	CP3	CP7	CP4	CP6	CP5
Pair #15:	NI2-CB	NSI1-CB	NI1-CB	NSI2-CB	NSI3	NSI3-CB	NSI2	NSI3-CB	CP1	NSI1	NI2	CP3	NI1	CP4	CP8	CP5	CP7	CP6
Pair #16:	NSI1-CB	NSI2-CB	NI2-CB	NSI3-CB	NI1-CB	CP1	NSI3	CP2	NSI2	CP3	NSI1	CP4	NI2	CP5	NI1	CP6	CP8	CP7
Pair #17:	NSI2-CB	NSI3-CB	NSI1-CB	CP1	NI2-CB	CP2	NI1-CB	CP3	NSI3	CP4	NSI2	CP5	NSI1	CP6	NI2	CP7	NI1	CP8

## 5 REMOTE RESOURCES

**@Cornell Motion Sickness Emergency** In case of medical emergency motion sickness



**@Cornell Motion Sickness Emergency** In case of medical emergency motion sickness (This should be for Technion)



**Latest Build** Here you can find the latest release version of the simulator.

