Evaluating Immersive Experiences

Notes for the SIT-DP module: **Developing Immersive Applications**

Created by: Chek Tien TAN

Developing for Immersion

DEVELOPMENT		**IMMERSION**
Design	→	User Experiences
Implementation	→	System Properties

Related video segment starts at:
https://youtu.be/zNpo3Ue2Ui0?si=goWyTKAZMEVCKIm3&t=1

Immersion as System Properties

What we build…

- 1800 x 1920 pixel resolution per eye
- Eye tracking
- Foveated rendering
- etc.

Related video segment starts at:
https://youtu.be/zNpo3Ue2Ui0?si=goWyTKAZMEVCKIm3&t=269

Immersion as User Experiences

What users feel…

- Presence
- Flow
- Cybersickness
- etc.

Related video segment starts at:
https://youtu.be/zNpo3Ue2Ui0?si=3tuKga3JRVnWcef2&t=347

Data Collection for Evaluating Experiences

Qualitative

- Interviews
- Think-aloud
- Observations
- etc.

Quantitative

- Likert-scale questionnaires
- Physiological data
- Telemetry data
- etc.

Related video segment starts at:
https://youtu.be/zNpo3Ue2Ui0?si=5XC6sv0mambyB_qy&t=412
https://youtu.be/Xhb6aduKJd4?si=q1MFwU5ULJ_CQnWL&t=138

Popular Validated Questionnaires

- Igroup Presence Questionnaire (IPQ)
  http://www.igroup.org/pq/ipq/download.php
- Flow scales from the mind garden
  https://www.mindgarden.com/100-flow-scales
- Simulator Sickness Questionnaire (SSQ)
  https://doi.org/10.1207/s15327108ijap0303_3
- Virtual reality sickness questionnaire (VRSQ)
  https://doi.org/10.1016/j.apergo.2017.12.016
- etc.

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Which of the following describes immersion from a systems perspective?

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Which of the following describes immersion from a systems perspective?

- Wide FOV — 0%
- Higher spatial presence — 0%
- Higher place illusion — 0%
- 8K Resolution display — 0%
- Lower cybersickness — 0%
- 6-DOF inside-out tracking — 0%

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Which of the following describes immersion from an experiential perspective?

ⓘ Start presenting to display the poll results on this slide.

Which of the following describes immersion from an experiential perspective?

- Wide FOV — 0%
- Higher spatial presence — 0%
- Higher place illusion — 0%
- 8K Resolution display — 0%
- Lower cybersickness — 0%
- 6-DOF inside-out tracking — 0%

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What experiential constructs were analysed in the user study in the paper on "Exploring Gameplay Experiences on the Oculus Rift"?

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What experiential constructs were analysed in the user study in the paper on "Exploring Gameplay Experiences on the Oculus Rift"?

- Flow — 0%
- Presence — 0%
- Place illusion — 0%
- Plausibility illusion — 0%
- Cybersickness — 0%

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What quantitative data was analysed in the user study in the paper on "Exploring Gameplay Experiences on the Oculus Rift"?

ⓘ Start presenting to display the poll results on this slide.

What quantitative data was analysed in the user study in the paper on "Exploring Gameplay Experiences on the Oculus Rift"?

- Flow 0%
- Presence 0%
- Cybersickness 0%
- Physiological measures 0%
- User behaviors 0%

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What quantitative data was analysed in the user study in the paper on "Understanding User Experiences Across VR Walking-in-place Locomotion Methods"?

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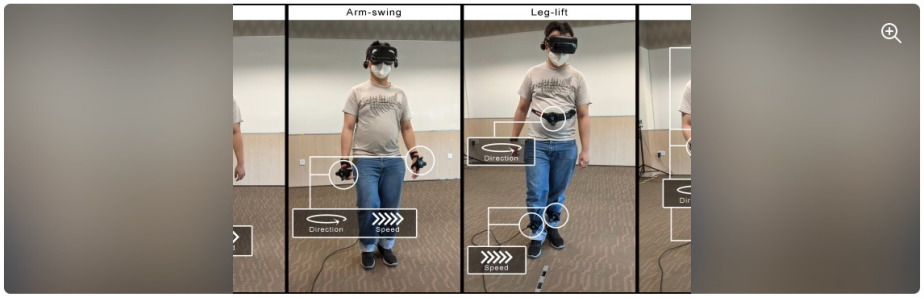
What quantitative data was analysed in the user study in the paper on "Understanding User Experiences Across VR Walking-in-place Locomotion Methods"?



- Flow 0%
- Presence 0%
- Cybersickness 0%
- Physiological measures 0%
- User behaviors 0%

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What qualitative data was analysed in the user study in the paper on "Understanding User Experiences Across VR Walking-in-place Locomotion Methods"?

- Flow — 0%
- Presence — 0%
- Cybersickness — 0%
- Physiological measures — 0%
- User behaviors — 0%

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What are appropriate types of data to answer this research question?

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What are appropriate types of data to answer this research question?

- Observations — 0%
- Think-aloud during the experience — 0%
- Validated Questionnaires — 0%
- Post-experience interviews — 0%
- Physiological sensing — 0%
- Telemetry — 0%

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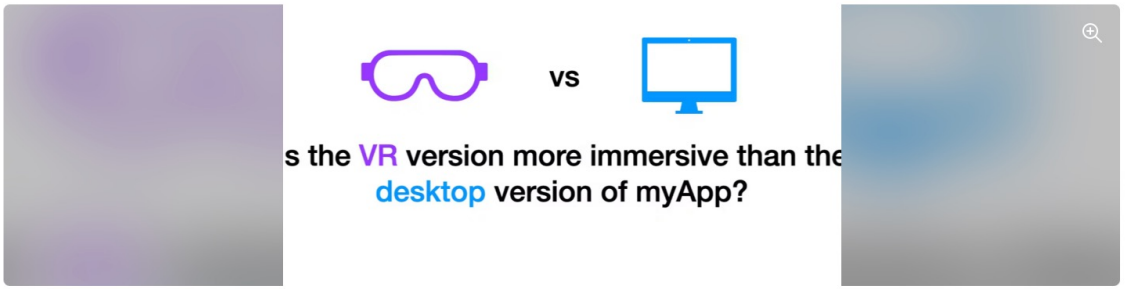
What is the best type of data to answer this research question?

ⓘ Start presenting to display the poll results on this slide.

What is/are the best type(s) of data to answer this research question?



- Observations — 0%
- Think-aloud during the experience — 0%
- Validated Questionnaires — 0%
- Post-experience interviews — 0%

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Which of the following is NOT a symptom of cybersickness?

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Which of the following is NOT a symptom of cybersickness?

- Blurred vision — 0%
- Eyestrain — 0%
- Giddiness — 0%
- Loss of self-consciousness — 0%
- Vertigo — 0%

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"This one feels dizzier than the previous one. "
- What dimension of cybersickness is this?

ⓘ Start presenting to display the poll results on this slide.

"This one feels dizzier than the previous one. " - What dimension of cybersickness is this?

- Disorientation 0%
- Nausea 0%
- Oculomotor 0%
- Involvement 0%
- Realness 0%

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"I find it very straining on my eyes to look at stuff in the scene after a short while" - What dimension of cybersickness is this?

ⓘ Start presenting to display the poll results on this slide.

"I find it very straining on my eyes to look at stuff in the scene after a short while" - What dimension of cybersickness is this?

- Disorientation 0%
- Nausea 0%
- Oculomotor 0%
- Involvement 0%
- Realness 0%

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Which cybersickness questionnaire is best when I need to use the results to inform v2.0 development of my VR application?

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Which cybersickness questionnaire is best when I need to use the results to inform v2.0 development of my VR application?

- SSQ 0%
- VRSQ/CSQ 0%

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Which cybersickness questionnaire should I use when I need to compare my results with a pool of prior research studies from others?

ⓘ Start presenting to display the poll results on this slide.

Which cybersickness questionnaire should I use when I need to compare my results with a pool of prior research studies from others?

- SSQ 0%
- CSQ 0%
- VRSQ 0%

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What is the type of experience being described here?

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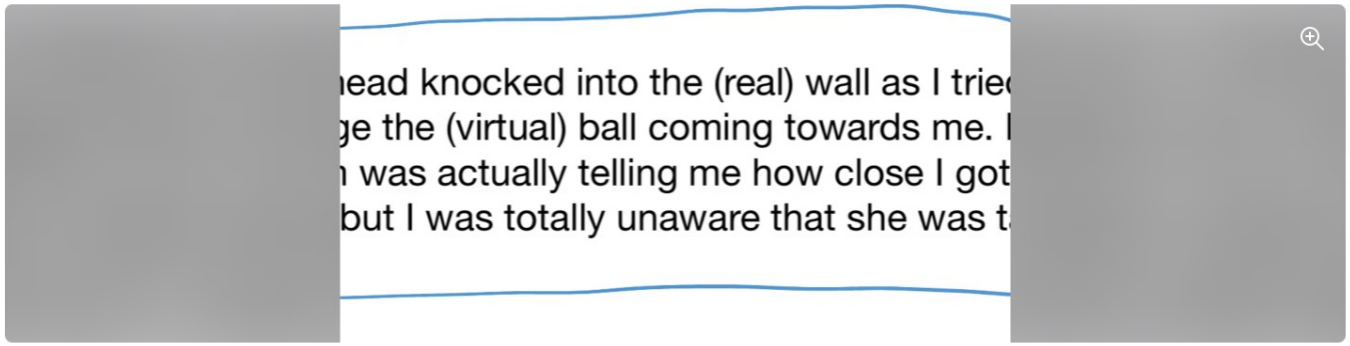
What is the type of experience being described here?



- Presence — 0%
- Flow — 0%
- Cybersickness — 0%

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What is the type of experience being described here?

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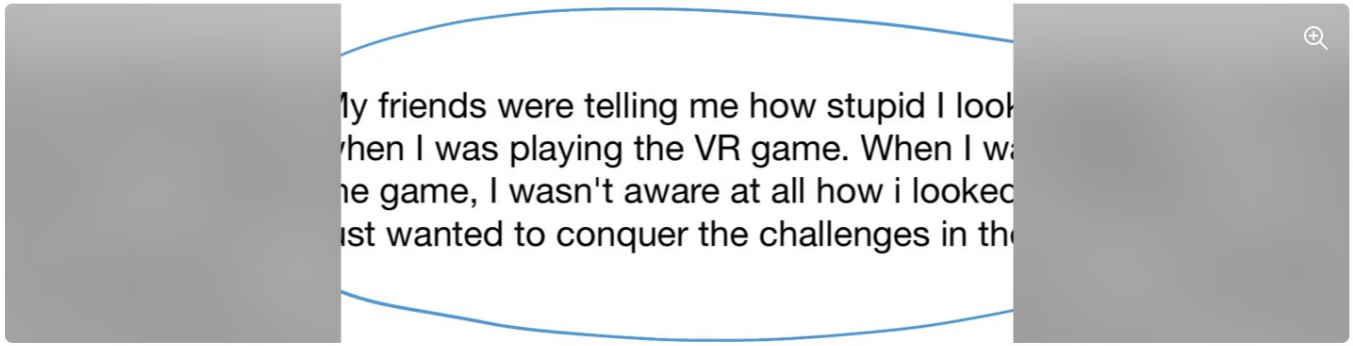

- Presence — 0%
- Flow — 0%
- Cybersickness — 0%

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What is the main affordance on a haptic glove for an experienced VR user?

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What is the main affordance on a haptic glove for an experienced VR user?

- [x] Reach out to touch things in the virtual environment — 0%
- [ ] Pick up the VR controller to interact with the virtual environment — 0%
- [ ] Wave hand in the air — 0%
- [ ] Hug another character in the virtual environment — 0%

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Which design provides the right affordance for a door that is meant to be pushed?

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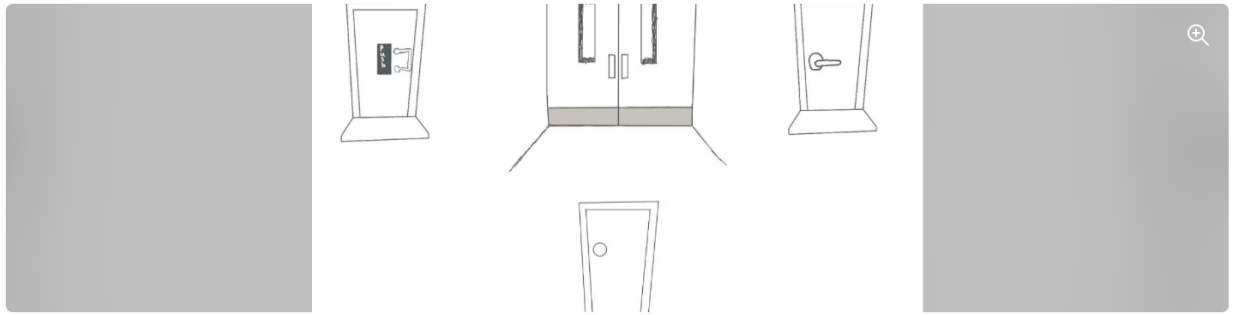
Which design provides the right affordance for a door that is meant to be pushed?



- Door with a large handle — 0%
- Door with a small handle — 0%
- Door with no handle and a flat metal plate — 0%
- Door with a twist knob — 0%
- Door with a large sign that says "PUSH" — 0%

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Name one application that do you feel provided you with the best experience, and why?

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Audience Q&A

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