Virtual Reality Experiments in the Study of Migrant Integration

Preliminary Ideas

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February 21, 2020

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Stated Preference/Choice Experiments

Controlled environment for hypothetical/forthcoming situations

- Used in a variety of discipline (mobility, marketing, insurance, etc.)
- Used to understand the new choice preferences
- Typically, pivoted on revealed preferences
- Provides control over the sample demographics and variables
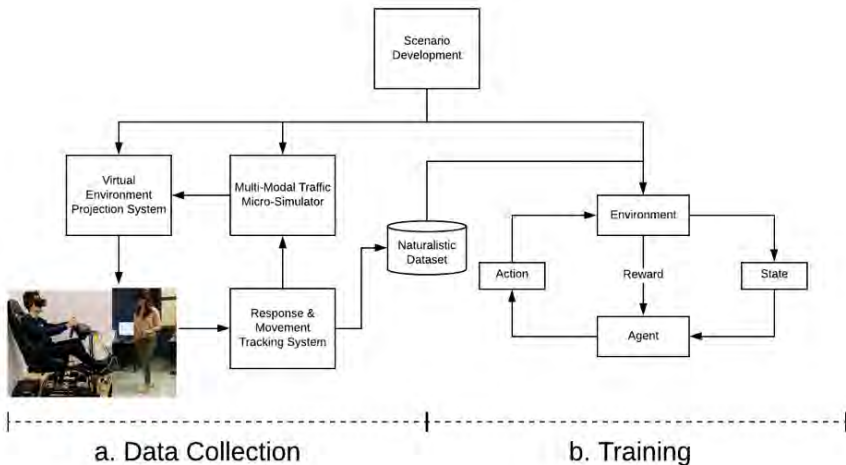- Typical tools: pen/paper, web, or phone interviews

Stated Preference/Choice Experiments

Role of Virtual Reality

- Useful tool for cases where the technology/service/scenario are:
  - Complex
  - New and unfamiliar
  - Without a baseline to relate to
- Comparison with text and animations/videos (Farooq et al. 2018)

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Virtual Immersive Reality Environment (VIRE)

a. Data Collection   b. Training

Pedestrian-AV interactions

https://arxiv.org/abs/2002.07325

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Pedestrian-AV interactions

Control Issues in Partial-AV (Level 2-3)

https://arxiv.org/abs/1901.07151
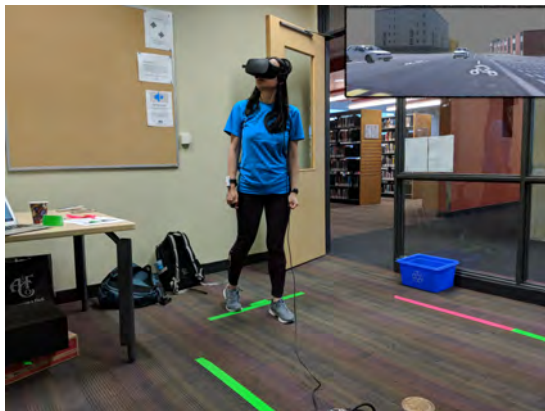
Control Issues in Partial-AV (Level 2-3)

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Immigration Preferences/Choices Situation

Similarities

- Lack of complete context
- Complexity of the environment, one is moving into
  - Not completely explainable by pamphlets and online material
- Choices made with limited information
  - Big personal and family consequences

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Understanding Neighbourhood Choice Decisions

Stated Choice Experiment using VR

- Research questions
  - What are the key neighbourhood attributes that affect the choice?
  - How the demographics of the neighbourhood affect the decisions?
  - How the characteristics of immigrant (decision maker) affect their choices?

Understanding Neighbourhood Choice Decisions

Stated Choice Experiment using VR

- Immersion into the scene required, but no dynamics
- 3D videos of actual neighbourhoods can be recorded
- Using smartphone and cheap cardboard VR, the videos can be displayed
- Questionnaires can be developed around this tool to address the research questions

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Discussion

- VR is a useful tool to understand choice behaviour in forthcoming situations
- Also useful in preparing/training individuals and making well-informed decisions

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Some Issues Around VR Usage

- VR learning curve & development cycle
- How much is real enough?
- (Serious?) game
- Is this a stated (or revealed) preference experiment?
- Motion sickness and duration of the experiment
- Extraction of the right variables for modelling
- Consistency of models and their assumptions

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Thanks very much for your attention!