Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality
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To cite this version:
Cléo Deroo, Angélique Montuwy, Béatrice Degraeve, Jean-Michel Auberlet, Anne-Hélène Olivier, et al.. Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality. TRB 2019 - Annual Meeting on Transportation Research Board, Jan 2019, Washington, United States. hal-02396553

HAL Id: hal-02396553
https://univ-rennes.hal.science/hal-02396553
Submitted on 31 Jan 2020

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**PEDESTRIAN COLLISION AVOIDANCE ON NARROW SIDEWALK: A MEETING BETWEEN PSYCHOLOGY AND VIRTUAL REALITY**

**Context: NARROW SIDEWALKS**

- Pedestrians manage social interpersonal distances.
- Encounter of two pedestrians is impossible.
- It can be seen as an URBAN JOUSTING.

**Goal:** To simulate a social virtual pedestrian (non player character) in order to study this kind of situation in virtual environment.

**Problem:** Why do we choose to step down or stay on the narrow sidewalk when we encounter a pedestrian walking in the opposite way?

**Impact of 3 personal factors were studied**

- **Speed** (fast – slow)
- **Sex** (Male – Female)
- **Distraction (texting – non texting)**

**Social Perception Model**

- **Speed and attention influence the decision to step down**
- Pedestrian is expected to step down when:
  - He walks fast.
  - He is attentive.
  - For the participants, no gender effects.

**First Experiment – Results**

- **Influence of speed and attention**
- Pedestrian is expected to step down when:
  - He walks fast.
  - He is attentive.
  - For the participants, no gender effects.

**Perception model for the virtual pedestrian**

- ORCA Model used.
- Different types of collision avoidance (anticipative, reactive)
- Different types of collision avoidance are a function of the walking speed, the perception model.

**Collision avoidance behaviors simulation (Orca model)**

**2nd Experiment – Results**

- **Credibility of model-based videos and fake videos according to the subjects’ answers**

**Discussion**

- To use Social Pedestrian Non Player Characters in VR environment is feasible.
- Needs to take into account the empowerment/authority.