Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality

Cléo Deroo, Angélique Montuwy, Béatrice Degraeve, Jean-Michel Auberlet, Anne-Hélène Olivier, Marie-Axelle Granie

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://hal-univ-rennes1.archives-ouvertes.fr/hal-02396553
Submitted on 31 Jan 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire HAL, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.
PEDESTRIAN COLLISION AVOIDANCE ON NARROW SIDEWALK: A MEETING BETWEEN PSYCHOLOGY AND VIRTUAL REALITY

Context: NARROW SIDEWALKS

- People maintain social interpersonal distances.
- Pedestrians often encounter each other.

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

To anticipate the collision:
- We avoid the collision by modifying our trajectory.
- Pedestrians maintain social interpersonal distances.

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.
- The virtual pedestrian decides to step down if his detection time is greater than the other pedestrian involving in the jousting.

Participants said why the virtual pedestrian stepped down (speed, sex, distraction) with a Likert scale.

Participants told who was to step down:
- 8x8 counterbalanced videos.

Overall ranking of the model-based videos.

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