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

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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: one has to step down and he is exposed to the road traffic.
- 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?

**Objective:**
- Study the pedestrian collision avoidance on narrow sidewalks.
- To develop a virtual pedestrian non-player character (NPC) in order to study this kind of situation in a virtual reality environment.

**Methodology:**
- **First Experiment – Results**
  - 64 videos of pre-jousting, before any modification of trajectory
  - 32 videos of counterbalanced videos
  - Participants told who was to step down: pedestrian at left or at right in the jousting with a Likert scale.
  - Participants said why the virtual pedestrian stepped down (speed, sex, distraction) with a Likert scale.
  - 8 videos of complete jousting with a Likert scale.
  - Participants said if the jousting was credible.
  - 64 videos of complete jousting with a Likert scale.
  - Participants told who was to step down: pedestrian at left or at right in the jousting with a Likert scale.

**Social Perception Model**
- Speed and attention influence the decision to step down from the narrow sidewalk.
- Pedestrian decides to step down if his detection time is greater than the other pedestrian involving in the jousting.
- The ORCA model used.
- **Second Experiment – Results**
  - 64 videos of pre-jousting, before any modification of trajectory
  - 32 videos of counterbalanced videos
  - One of 8 videos is a fake video (opposite of the model result).
  - Participants said if the jousting was credible.
  - 64 videos of complete jousting with a Likert scale.
  - Participants told who was to step down: pedestrian at left or at right in the jousting with a Likert scale.

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