Pedestrian collision avoidance on narrow sidewalk: a meeting between psychology and virtual reality
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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
- Encountered by two pedestrians is impossible
- One must step down and he is exposed to road traffic
- It can be seen as an URBAN Jousting

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

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

**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 from the narrow sidewalk

**Assumptions:**
- Speed and attention increase the detection time in the ORCA model.
- Detection time is then a score
- Virtual pedestrian decides to step down if his detection time is greater than the other pedestrian involved in the jousting

**N.B.:**
- The virtual pedestrian sees pedestrian in both the public space and detects him in the social space

**First Experiment – Results**
- 64 videos of pre-jousting, before any modification of trajectory
- 8x8 counterbalanced videos
- Participants told who was to step down: pedestrian at left or right in the jousting with a Likert scale.
- Participants said why the virtual pedestrian stepped down (speed, sex, distraction) with a Likert scale.

**Second Experiment – Results**
- Speed and attention influence the decision to step down from the narrow sidewalk

**Assumptions:**
- Speed and attention increase the detection time in the ORCA model.
- Detection time is then a score.
- Virtual pedestrian decides to step down if his detection time is greater than the other pedestrian involved in the jousting

**N.B.:**
- The virtual pedestrian sees pedestrian in both the public space and detects him in the social space

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