Vision and steering: What’s around the bend?

George Kountouriotis
Institute for Transport Studies
Faculty of Environment

Aims
- How do we successfully perform a complex task such as steering around a bend?
- What visual information do we use?

Methods
- We use tightly controlled virtual environments and ask participants to steer down bends maintaining different positions in the road.
- We vary the information available in the world.
- We also vary where people look and what trajectories they take.
- We measure where people look in the world and their trajectories.

Where do we look?
- A popular steering theory suggests that we only need to look at the inside road-edge to steer successfully.
- This theory suggests that the angle of gaze when looking at this point indicates the curvature of the bend.
- We tested this theory by asking participants to steer down bends maintaining different positions in the road.
- We found drivers looked at points in their future path approximately 1.5 seconds ahead.
- Fixations on the inside road-edge only occurred when participants cut the corner of the bend.

If not the inside edge then…?
- Wilkie & Wann proposed that by looking on a point in our future path we can steer successfully.
- This model, however, does not take into account the road-edges.
- By varying the visibility of the road-edges we can examine if one road-edge is more useful than the other.

What's the role of gaze?
- When we enforced fixation to specific parts of the scene there was an interesting interaction between gaze direction and road-edge visibility.

How do we sample visual information?
- The next part of my research examines whether steering performance changes when there is an attentional load at the point of fixation (similar to reading a road-sign).
- Preliminary data suggests that the type of load can alter steering performance.

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References