Recent research challenges in pedestrian modeling

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Motivation: why modeling pedestrians?

- Emergency, evacuation
- Design of new facilities
- Multimodal platforms
- Urban congestion
- etc.

Areas of research

- **Data collection**
- **Behavioral models**
- **Simulation environment**

Data collection

- **Questionnaires, counts**
- **Pedometers**
- **GPS, GSM**
- **Video**
- **Smartphones**

Data collection: smartphones

- **GSM, GPS**
- **Accelerometer**
- **WiFi**
- **Bluetooth**
- **Ambient sound**
- **And more…**

Data collection: smartphones

- **Softwares:**
  - **Call log**
  - **SMS log**
  - **Media player**
  - **Calendar**

Issues

- **Not travel data**
- **Activities, paths, not directly observed**
- **Poor quality**
- **Electrical power**
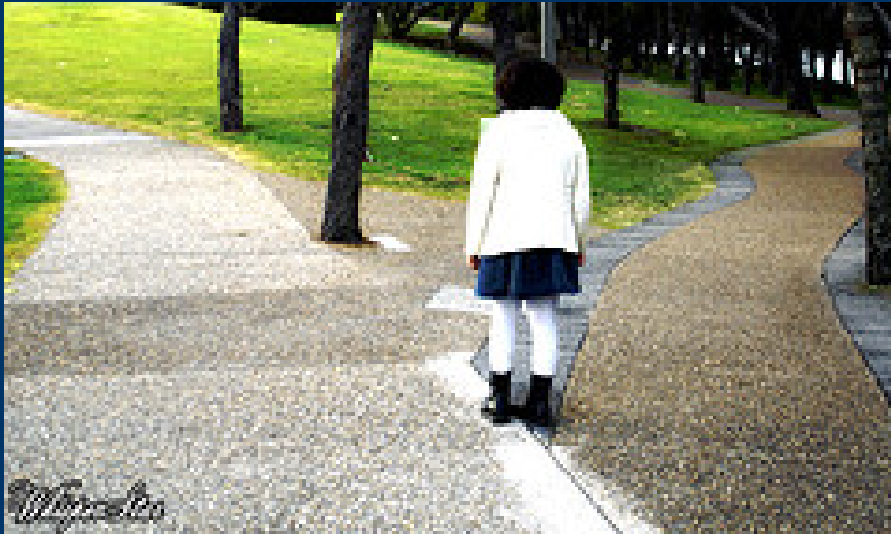- **Large quantity of data**
- **Privacy**

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Choice models

- **Standard in transportation demand**
- **Travel models**
- **Driving models**
- **Disaggregate**
- **Flexible**

Activity choice

- **Group behavior**
- **Impulse stops**
- **Walking may be an activity**

Destination choice

- **Coupled with activity choice**

- **Large choice set**

- **May change dynamically**

Mode choice

- **Stairs**
- **Elevators**
- **Lifts**

Route choice

- **No physical network**
- **Intermediary targets**

Walking behavior

- **Next step**
- **Speed**
- **Interactions**
  - **Group**
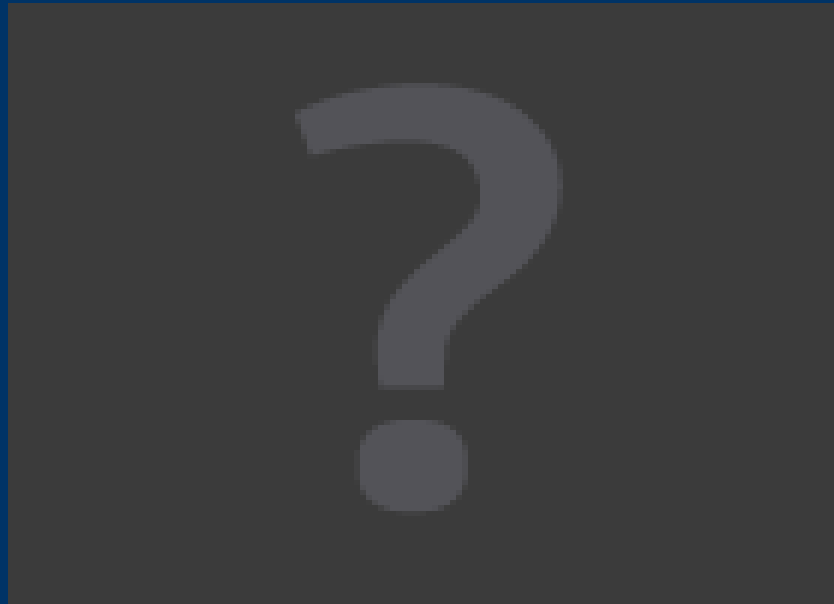 - **Leader-follower**
  - **Collision avoidance**

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Simulation

Application: video tracking

Conclusion

- **Modern field of research**
- **Complex and challenging**
- **Applications are many**