

# 04

## Inferring Pedestrian Flow while protecting privacy

- Probabilistic behavior model for discovering pedestrian flow -

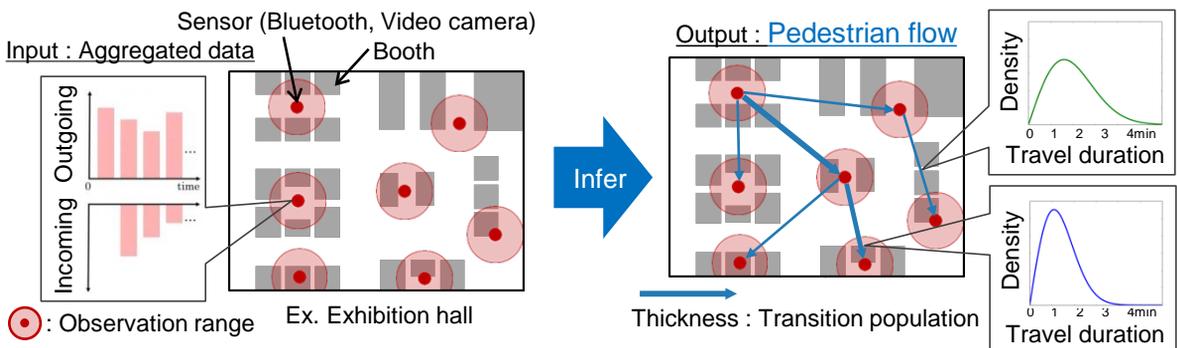
### Abstract

With recent advances in wireless and mobile networks, location information of pedestrians can be recorded in a variety of spaces such as exhibition halls and shopping malls. However, **location information of pedestrians is often aggregated for protecting privacy**. Aggregated data is a set of incoming and outgoing pedestrian counts at each location. So, it is not straightforward to know pedestrian flow between locations from the aggregated data. In this exhibition, we propose a probabilistic model for **inferring latent pedestrian flow between locations using only aggregated data**. By incorporating **distributions of travel duration between locations**, the proposed model can precisely estimate the pedestrian flow between locations. Our model enables us to understand pedestrian mobility patterns while protecting privacy, which provides **better navigation** and **location-based mobile advertising**.

**Our goal** : Discovering latent pedestrian flow using only aggregated data

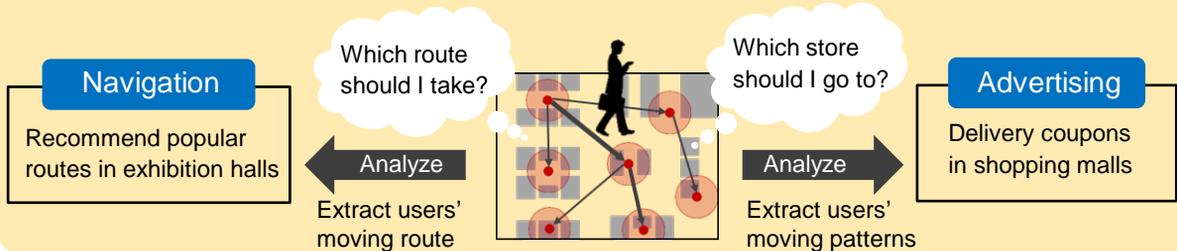
#### Problems:

- ✓ Aggregated data **do not contain tracking information of individuals**
- ✓ We **do not always have a large enough number of sensor devices** to cover large-scale facilities



- Analyzing relation between incoming and outgoing pedestrian counts at each pair of locations
- Simultaneously estimating **travel duration distributions and transition population between locations**

**Application**: While protecting users' privacy, ...



### Reference

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