

## SEZAKI LAB.

## [ Urban Sensing and Mobility Analysis ]

Center for Spatial Information Science

Socio-cultural Environmental Studies

Information &amp; Communication Engineering

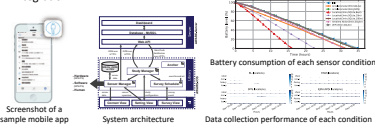
<https://www.mcl.iis.u-tokyo.ac.jp>

## AWARE : Open Source Mobile Sensing Framework

**Background:** The smartphone is used as a sensing platform among a great number of researchers. However, the development cost for a stable sensing application is quite high and takes lots of tedious works.

**Goal:**

- Providing a stable mobile crowd sensing framework
- Continues integration by open source community, and flexible framework integration

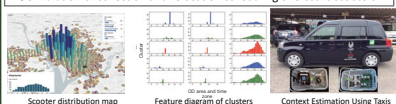
Personal Mobility Optimization  
Using Available Taxi Resources**Background.**

Rapid spread of dockless micromobility such as electric scooters and increase in relocation costs

Excess supply of existing means of transportation (e.g., cabs) due to the increase in new transportation

**Use excess resources to optimize the relocation of dockless micromobility**

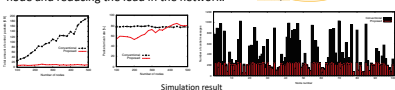
- Context detection in taxi cabs
- Simulation of collection and relocation scheduling of electric scooters

Route Construction Method Based on Traffic Load  
for Cellular-assisted MANET**Purpose:**

MANET, which uses mobile communication, may cause uneven traffic load distribution since its area restriction algorithm prioritizes a neighboring area of a node having many neighboring nodes to make a virtual area.

**Result:**

Succeeded in distributing the traffic load of each node and reducing the load in the network.

Estimate UV Exposure by using Signal Strength  
from Satellites**Background:**

Too much UV exposure cause skin cancer  
Vitamin D is produced when we are exposed to UV

**Purpose:**

Estimate UV exposure from smartphone (without special sensor)

**Proposed Method:**

Measured UV exposure and strength of GPS in a sunny day Estimated UV exposure from the strength of GPS

MiMoSense: An Open Crowdsensing Platform  
for Micro-Mobility**Background:**

The lack of an open sensing platform for micro-mobility forces researchers to build their own data collection platform from scratch, which could be laborious.

**Contribution:**

1. As an open-source platform, MiMoSense shifts the researcher's focus from software development to sensing data analysis.
2. MiMoSense's various interface could unleash the potential of micro-mobility related research.

Designing an Incentive Model for  
Promoting Hygiene Behaviors**Background:**

A behavioral tracking application (SelfGuard) recognizes users' infection prevention behaviors such as hand washing, stay recording, and physical condition recording through sensor-based experiments and data analysis. By providing incentives for those behaviors, we will identify how they affect people's behavior.

**Significance:**

Our goal is to help users improve their person hygiene and lower the risk of infection.

