

# SEZAKI LAB.

## [Ubiquitous Network and Location Information]

Center for Spatial Information Science

Information & Communication Engineering

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

Information and Communication Engineering

Socio-cultural Environmental Studies

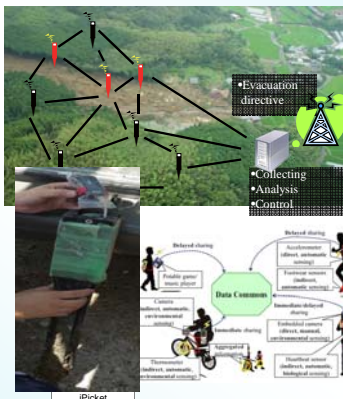
### Network Technology

Mobile Ad-hoc Network, Sensor Network, Human Probe

- Network that can be constructed even with environment without infrastructure
- Multi-hops between terminals wireless
- Sensing with Human

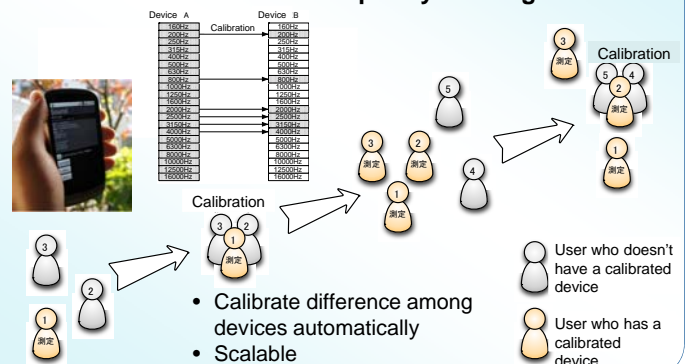
#### Research topic

- Power control
- Efficient Routing
- Multicast
- Data delivery
- Data aggregation
- Data correction
- Disaster

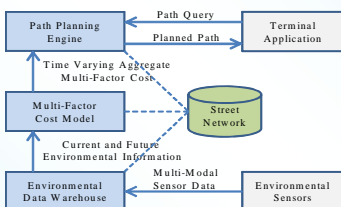


### Commu Sense

Calibration Scheme for Participatory Sensing

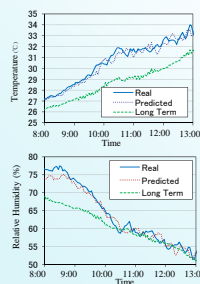


### Urban Sensing and Intelligent Navigation



The architecture of the mobile navigation system. The optimal paths with the consideration of environments are provided for the pedestrians in real time.

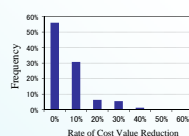
The combined sensor node measuring temperature and humidity (left), the stereo camera sensing pedestrian flow (middle), and the deployment map for the sensors (right).



The predicted information for temperature (left) and humidity (right). The mean errors are -0.12 degree for temperature and -0.25% for humidity level.



The map view of the mobile navigator client with a planned path displayed.

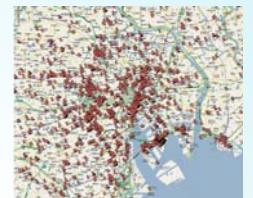


The histogram of improvements of user's comfort levels. 46% of paths have been improved.

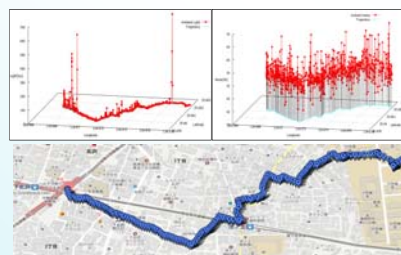
### Mobility Analysis using GPS

Estimation of Human Behavior using Twitter and GeoTag

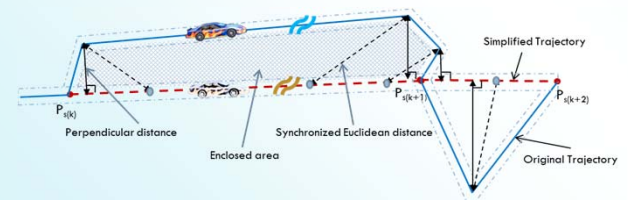
Visualization of Geo-tagged tweets →



Trajectory Sensing Simplification



- Application scenarios:
- Economic activity estimation
  - Safety route recommendation
  - Indoor navigation & positioning



### Sensing Social Network using Smartphone



### RFID Antenna for New Materials

IntelliGlass: Totally transparent Passive RFID antenna

- RFID Antenna for new materials, "glass".
- "IntelliGlass" is totally transparent passive RFID antenna.
- It is possible to use in the shape that blends in the interior, like a bar, shop, advertisement and so on.

