It is expected that sharing data many users have collected using their devices will enable grasping of various situations around the world. This type of data sharing achieves participatory sensing. In line with this approach, we propose a virtual sensor construction technique that enhances sensor data quality by consolidating it, thus creating the illusion that reliable sensors exist everywhere.

### Features

- **Feature #1**: Sensing data collected in a participatory sensing environment tends to be noisy due to the use of low accuracy sensors or a mix of sensors with diverse accuracy. To solve this problem, the proposed method expands the sensed regions while preserving their spatio-temporal patterns. This method achieves statistical estimation of the population means of sensor data in each region.

- **Feature #2**: In participatory sensing environments, the sensors and sensing area depend on users. Therefore, data as a whole is unevenly distributed and incomplete. To solve this problem, the proposed method estimates the missing data and enhances the data coverage ratio by using the local correlation with heterogeneous sensor data.

### Application Scenarios

- Visualizing congestion in towns, roads, or transportation means.
- Navigating appropriate routes for kids, elderly people, or people with pets or baby buggies.
- Issuing alerts not to go into areas where allergens may exist.

### NTT Group Global Advantage

For participatory sensing, which is attracting global attention, NTT is among the first to focus on data defectiveness and start research and development of reliable virtual sensor construction technique.