

# Information Integration Method from On-board and Roadside Sensors in Multimodal-Mobility Environment

Takuma Ito <sup>1)</sup> Wataru Furuse <sup>1)</sup> Misato Nihei <sup>1)</sup>

*1) The University of Tokyo*

*7-3-1 Hongo, Bunkyo, Tokyo, 113-8656, Japan (E-mail: takumaito@g.ecc.u-tokyo.ac.jp)*

**KEY WORDS:** Safety, Intelligent vehicle, Intelligent/computer application, Localization, Kalman filter [C1]

To improve the environmental recognition performance of mobilities in a residential traffic environment, we discuss an information platform for integrating on-board and roadside sensor information. In a residential traffic environment, because a variety of traffic participants share a narrow road, intelligent mobility requires a high-level performance of environmental recognition. The proposed platform integrates various information to estimate the position of all traffic participants with considering the uncertainty of each sensor information. To confirm the effectiveness of combining on-board and roadside sensors, we conducted the simulation evaluation. Figure 1 shows 95% probability ellipse based on roadside sensors around crossroads. On the contrary, Fig. 2 shows 95% probability ellipse based on roadside sensors around crossroads and on-board sensors. As shown in the Figs., combination of both sensors can reduce the size of 95% probability ellipse, which means that the combination improve the accuracy and certainty of the position estimation.

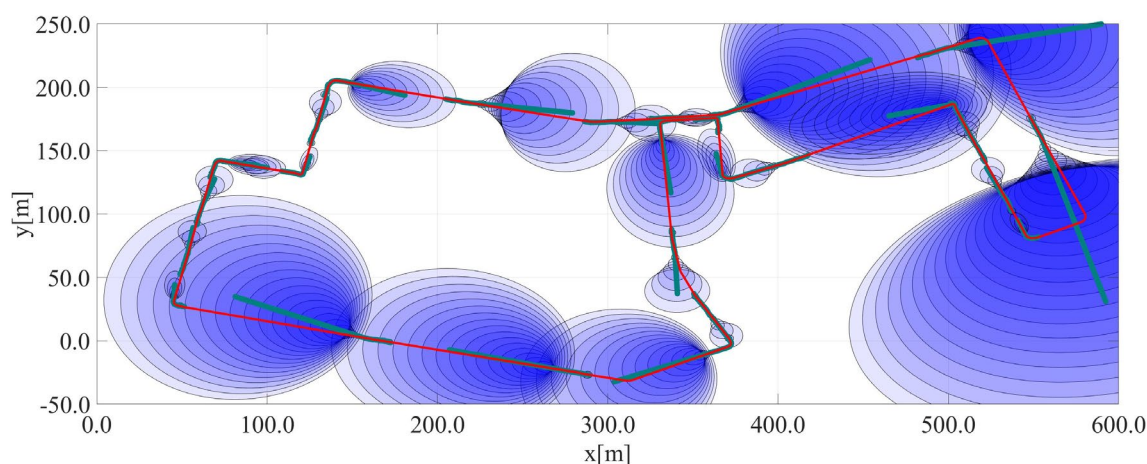


Fig.1 95% Probability Ellipse based on Roadside Sensors around Crossroads

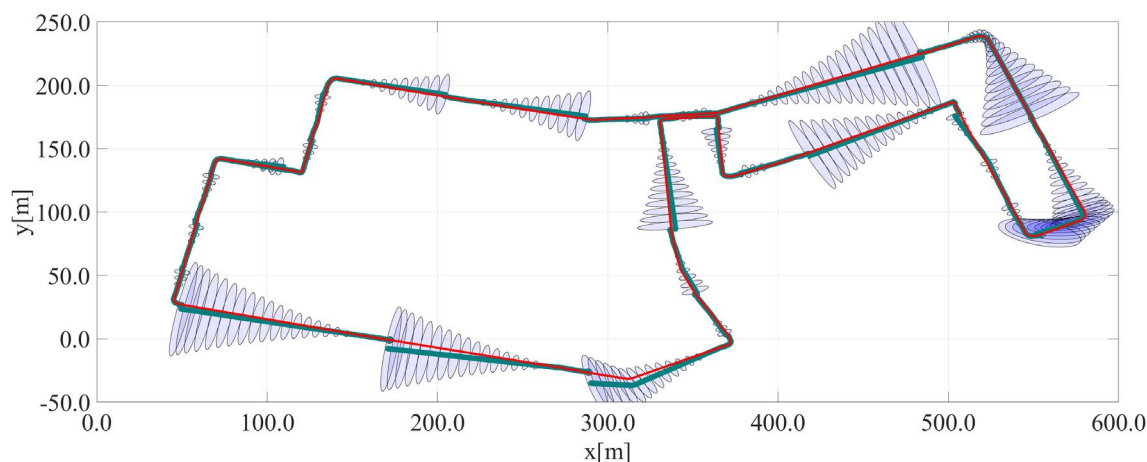


Fig.2 95% Probability Ellipse based on Roadside Sensors around Crossroads and On-board Sensors