

# Visualization of Traffic Flow and Atmospheric Pollutant Flow in Urban Areas

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We propose a novel visualization system which simultaneously represents both traffic flows on urban roads and flows of atmospheric pollutant emitted by the vehicles for ITS application, which is a collaborative research with three labs in IIS, majoring in different fields. The CAD-based urban model is constructed by us using 2D house map and aerial photograph. The traffic flow is calculated by a traffic simulator developed by Kuwahara (civil/traffic eng.) lab. And the density of  $\text{NO}_x$  and  $\text{SO}_x$  are calculated by wind-tunnel test by Kato/Ooka (fluid dynamics) lab, using our geometry model, according to the traffic simulation result. We represented the behaviors of vehicles and air pollutants using polygons and translucent particles. The system is applied for public roads around Ikegami-Shincho Intersection in Kawasaki-City, Kanagawa and Tomigaya Intersection in Shibuya-ku, Tokyo. Especially in the latter area, construction of new underground expressway is going on, and our system will help environmental impact assessment by simulating the effectiveness of ventilation towers in construction plan by setting up virtual towers and expressways in each model.

## Publication

- [1] K. Azmi, "Construction of Dynamic 3-D Virtual Urban Space," in *master thesis for Faculty of Information & Communication Eng., Grad. School of Information Science and Tech., The Univ. of Tokyo*, Mar., 2005.
- [2] K. Azmi, S. Ono, M. Kagesawa and K. Ikeuchi, "Automatic Reconstruction of Large-scale Virtual Environment for Intelligent Transportation Systems Simulation," in *Proc. of 11<sup>th</sup> World Congress on Intelligent Transport Systems and Services (ITSWC 2004)*, Oct., 2004.

