Mixed Traffic Flow Management Condensing the Impact of the Air Pollution

Project Leader
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Faculty Members Involved in this Project
None

1. Objective
This project is aimed at:
investigation of road traffic management schemes, considering their impact on air pollution under mixed traffic conditions in which passenger cars, trucks and motorcycle all use a given section of road. In particular, this project focusses on the evaluation of road network performance of whole cities, from a macroscopic point of view, in eastern Asian countries in which the population and economy are both expanding. Therefore, a macroscopic mixed traffic flow model will be formulated, and a scheme to improve traffic conditions and reduce air pollution will be proposed by evaluation of road network performance based on the model developed in this project.

2. Project Outline
To that end, the project will consist of the following phases:
(a) Development of a macroscopic mixed traffic flow model
(b) Estimation of road traffic network performance considering both traffic congestion and air pollution
(c) Propose a road network management scheme for mixed traffic conditions, such as motorcycle lane network design, and traffic signal control planning
(d) Evaluation of the impact of air pollution issues when implementing the proposed road network management scheme

3. Expected Performance
In this project, the successful candidate would be expected to:
(a) Work independently to establish a hypothesis, develop the model, and evaluate road network management
(b) Provide supervision for mixed traffic road management

4. Required Skills and Knowledge
The successful candidate for this project will have the following knowledge and skills:
(a) Knowledge on Traffic engineering, infrastructure planning and statistics
(b) Programming skills and knowledge of relevant computer technologies, including Python, R, and SPSS

References
2) Yasuhiro Shiomi, Hiroaki Nishiuchi and Toshio Yoshii: Mode Classification for Mixed Traffic Flow Based on Smart Phone Data, Journal of the Eastern Asia Society for Transportation Studies, Vol. 11, pp.1970-

3) Hiroaki Nishiuchi, Yasuhiro Shiomi and Hiroshi Warita: A new concept to evaluate road traffic capacity based on number of passengers in vehicle: Case application of Tokyo Metropolitan Expressway, Proceedings of the Eastern Asia Society for Transportation Studies, online, Vol.10, 2015.


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