

Background

- Heavy traffic congestion (①: **demand > capacity**) on urban roads
 - Lack of systematical land use and transportation planning
 - Mixed traffic (②) along with undisciplined user behavior (③)
 - Inappropriate traffic operations at intersections (④) (= **capacity bottlenecks**)

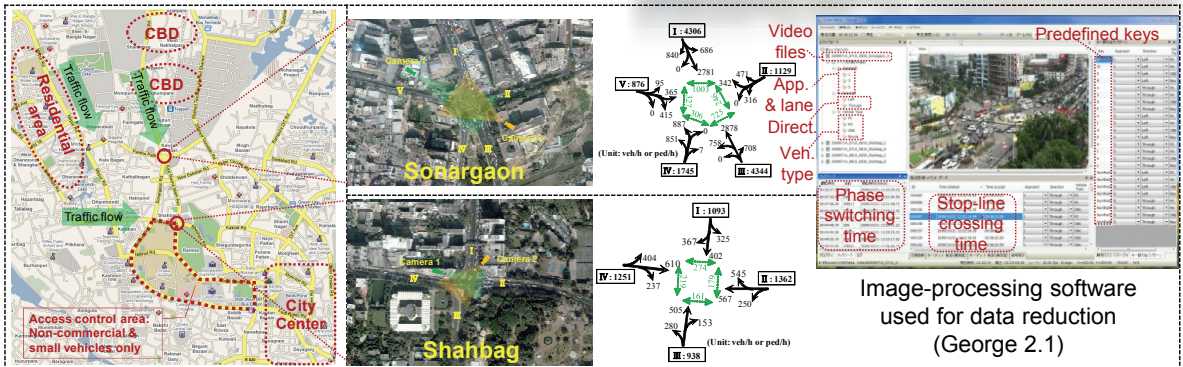


Purpose

- To **evaluate operational performance** of key intersections in Dhaka, Bangladesh, and **propose improvement schemes** for them to alleviate traffic congestion on urban road network

Study Sites & Data Collection

- Two key intersections in Dhaka, Bangladesh
- Video survey time: 07:30~09:30 am, July 13th, 2009
- Data reduction with a resolution of 1/10 sec.

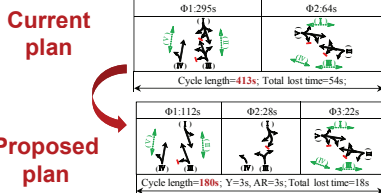


Improvement Schemes

Sonargaon

- ✓ redesign signal phasing
- ✓ shift stop-lines
- ✓ compact island

Signal Control

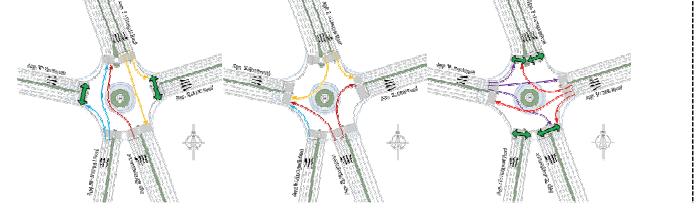
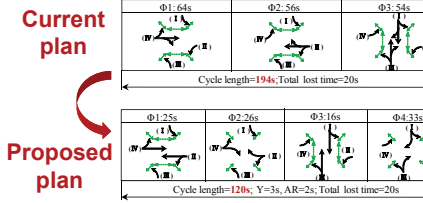


Geometric Design



Shahbag

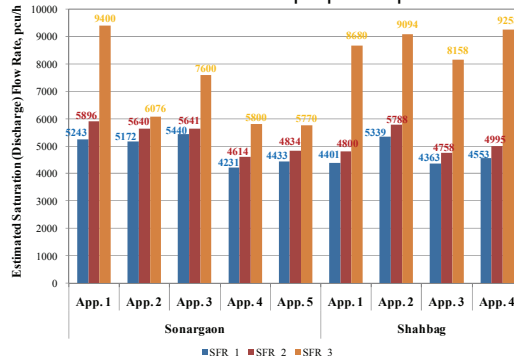
- ✓ redesign signal phasing
- ✓ increase taper lengths



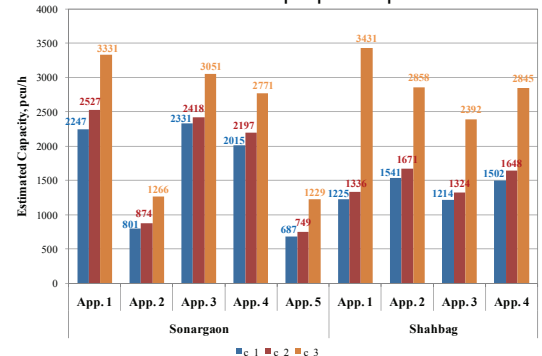
Performance Evaluation

- SFR_1: measured SFR under the current situation (red-light-running, bus stops, etc);
- SFR_2: estimated SFR under the current situation by assuming disciplined user behavior (comply with traffic signals and follow lane markings, etc);
- SFR_3: estimated SFR under improvement schemes, assuming disciplined user behavior;
- c_1~c_3: estimated capacities based on SFR_1~SFR_3.

Estimated **saturation flow rates** under the current and proposed plans



Estimated **capacities** under the current and proposed plans



Conclusions

- **Capacity** could be increased by **8.5%** at Sonargaon and **9.1%** at Shahbag in average, if road users completely comply with traffic rules.
- **Capacity** could be improved up to **44.1%** at Sonargaon and **110.2%** at Shahbag through proposed schemes.

Contact

tang@iis.u-tokyo.ac.jp
 Keshuang Tang, JSPS Postdoctoral Research Fellow
 Institute of Industrial Science, The University of Tokyo