INTRODUCTION

Video surveillance system in urban areas provides valuable data source for traffic analysis and diagnosis. In recent years, many cities have expanded their video surveillance system. Urban networks in these cities are covered by cameras with significantly improved image processing technology. A systematic and comprehensive system that can make full use of such big data source is desired.

OBJECTIVES

• Build up an integrated system to preprocess, analyze, and visualize data from video surveillance system
• Provide interactive visual analytics tools with a series of new visual technologies for comprehensive traffic analysis

FRAMEWORK

The proposed system mainly consists of the following three modules:

Database module: to prepare qualified data for analysis, visualization and diagnosis. Database module mainly process two types of data: data from automated license plate readers and traffic network data. Automated License Plate Reader (ALPR) data are standardized, corrected and stored properly in a database server. Traffic network data are downloaded, modified and stored.

Analysis module: to analyze and diagnose traffic condition at intersections, along links and over networks. This module consists of two layers: estimation and diagnosis. The estimation layer is responsible for efficient and accurate estimations of traffic condition characteristics using ALPR data.

Visualization and diagnosis module: to visualize results from previous module and do traffic diagnosis based on visualization outcomes. This module includes a variety of charts and map tools for different needs. Multiple choices are provided for best presentation of results of traffic analysis and diagnoses. Based on these visualizations, traffic status is diagnosed.

CASE STUDY

• Location: Suzhou, China
• Number of Sensors: 543
• Number of Intersections: 80
• Date: 04/01/2017 – 04/02/2017

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Suzhou Daily Data Volume

ALPR Coverage
Traffic Speed Map
Origin Destination Map
Origin Analysis
Contour Map
Bottleneck Identification