

# MASTERS FINAL ORAL EXAMINATION

**Friday, November 18<sup>st</sup>  
3:00p.m. @ 216 Atanasoff**

**Kundan Kumar**

**Major Professors: Soumik Sarkar and Jin Tian**

## **Interactive Data Visualization for Road Traffic System**

A browser based visualization of traffic and weather data will be helpful to understand the interaction between the weather and traffic. However, visualizing this data on a web-browser is difficult. Since, plotting the data pixel by pixel is memory intensive and cannot be directly handled by the web-browser. A novel and innovative approach to handle large and complex data sets is to use texture for data-visualization.

Our solution is to create textures with both weather and traffic data and plot them on the web-browser using Web-gl. The textures are created as a preprocessing step using Spark to aggregate the required data. Spark provides interactive data analysis of large data-sets by reducing latency through caching. It is a programming model that provides visualization tools, which enable smooth integration with web based API. We also use D3 and leaflet API integrated with Spark. Sampling and Manipulating large data sets, are used to generate the textures that can render on web-browser.

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