Real-Time Crash Risk Visualization Tool for Traffic Safety Management

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“Power Safer Roads for Smarter Cities”
Real-Time Safety

• Real-time safety analysis

• Implementation
  • Understanding the microscopic crash mechanisms
  • Estimating crash likelihood in real-time
  • Improving traffic safety in real-time
Proactive Perspective of Traffic Safety

• What patterns are we looking for?
  • Developing a Hybrid Detailed Crash Prediction System Using ITS Data on I-4 and Evaluating the Application Strategies
  • Speed profile before/after crash on I-4
Proactive Perspectives of Traffic Safety

• Real-time crash risk for I-4

Hazard Ratio: Contour plots of hazard ratios corresponding to coefficient of variation in speed (42 model outputs)
Proactive Perspectives of Traffic Safety

• Real-time crash risk for I-4

Hazard Ratio: Contour plots of hazard ratios corresponding to coefficient of variation in speed (42 model outputs)
Most data sources used in our system are public.
Summary of Data and Sources
REAL-TIME CRASH RISK VISUALIZATION for Operators

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Real-Time Crash Risk

Freeway  Arterial

Top 5 High-Risk Arterial Segments

- 1013_2
- 1184_3
- 1006_1
- 2004_2
- 1006_3

Chart Detail

Real-Time Status

Pro-Active Traffic Mgmt
“Real-Time Algorithms – Summarized based on our more than 200 peer-reviewed papers”

REAL-TIME CRASH RISK VISUALIZATION for Operators
Impact of VSL and RM

High risk
Concluding Remarks

• Public and Private data
• Real-time, historical (static) and other data
• Infrastructure and Vehicle based data
• State-of-the-art and state-of-the-practice
• Seamless usability

• Challenges:
  • Base Map
  • Coordination with numerous agencies
  • Data uniformity
  • Adoption
Thank You

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