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Ingenuity for life

Siemens ITS Digital Lab

AI and machine learning applications solve mobility challenges

Experts at Siemens visionary Intelligent Traffic Systems (ITS) Digital Lab use artificial intelligence and machine learning to develop new applications that help cities unravel even their toughest mobility problems.

Turning data into action

The intelligent use of data collected by the city, its vendors and third parties is at the heart of these state-of-the-art applications. Digital Lab analytical experts gather and enhance all pertinent data so that it generates real value.

Enhance Data

Infrastructure: traffic controllers, detection

Fleet data: connected vehicles, e-bikes, public transportation, transit schedules

Third-party data: probe car data, weather data, events, police reports

Generate Value

See: data preparation and visualization

Understand: descriptive and predictive analytics

Act: recommendations for action and operations

Shaped by innovation

Applications are created by collaborating with city departments in an agile rapid innovation process that leads to quick results for real-world mobility challenges.

Learn	Investigate	Ideate	Experience	Develop
• Pain points • Challenges	• Follow user • Conduct interviews	• Synthesize • Prioritize	• Follow customer/ user through proposed solution	• Rapid prototyping along defined milestones
Problem definition	**User journey**	**Vision of solution**	**First concrete "notion" of solution**	**Operative pilot: Minimum Viable Product (MVP)**

http://siemens.com/digitallab

The ITS Digital Lab works with its customers to create software tools to improve accessibility, predictability and enhancement of mobility ecosystems.

Parking Predictions as a Service

Issues

- Uncertainty about parking availability for commercial and passenger transport, including trucks, electric vehicles, shared and personal vehicles
- Search for parking creates traffic congestion and air pollution

Solution

- Use AI to predict availability 24 hours in advance
- Open interfaces enable compatibility with third-party systems
- Cloud-based Parking Predictions as a Service (PaaS) platform enables easy access

Benefits

- Reduces driver's stress from searching for a parking spot
- Increases revenue from unused parking spots
- Enables dynamic pricing strategies
- Reduces vehicle emissions

Eventful: Event Popularity Prediction

Issues

- Lack of information about location of popular unofficial events
- Unforeseen demand causes overcrowding, congestion and increases journey times
- Potential additional transit ridership and revenue lost to ride-sharing services

Solution

- Use AI to automatically identify unofficial events, predict popularity
- Map popular events against public transit options for proactive planning
- Use predicted event data for traffic signal planning and sign changes
- Make recommendations for on-demand transit services

Benefits

- Eliminates need for manual tracking of unofficial, popular events
- Enables proactive planning of traffic and transit services, including modified or additional transit services
- Increases ridership and captures revenues lost to ride sharing

ITS Data Hub: Traffic Data as a Service

Issues

- Data exists across multiple systems and infrastructure
- Disconnected data difficult to fully utilize or share with vendors
- Lack of standardization and open interfaces in mobility industry

Solution

- Cloud-based Traffic Data as a Service (DaaS) platform that is vendor-agnostic
- Enables open APIs for data exchange between city and suppliers, including controller configuration and SPM
- Modern system architecture pattern is robust, scalable and enables security by design from day one

Benefits

- Allows easy data sharing with third-party vendors
- Reduces total cost of using traffic data
- Scalable, vendor-agnostic system reduces long-term investment
- Enables potential new business model enabled by traffic and transit data commercialization

Crash Hotspots Identifier

Issues

- Accident-prone sites cause injuries and traffic-related issues
- Impact can be far reaching and life-changing for those involved

Solution

- Predict crash hotspots using data from police and incident reports
- Recommend prevention plans and countermeasures
- Integrate into automated response plans for signal timing changes, signs and messaging actions

Benefits

- Fewer accidents in high-volume locations
- Better, more automated response plans increase safety
- Improved life safety for passengers and pedestrians

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