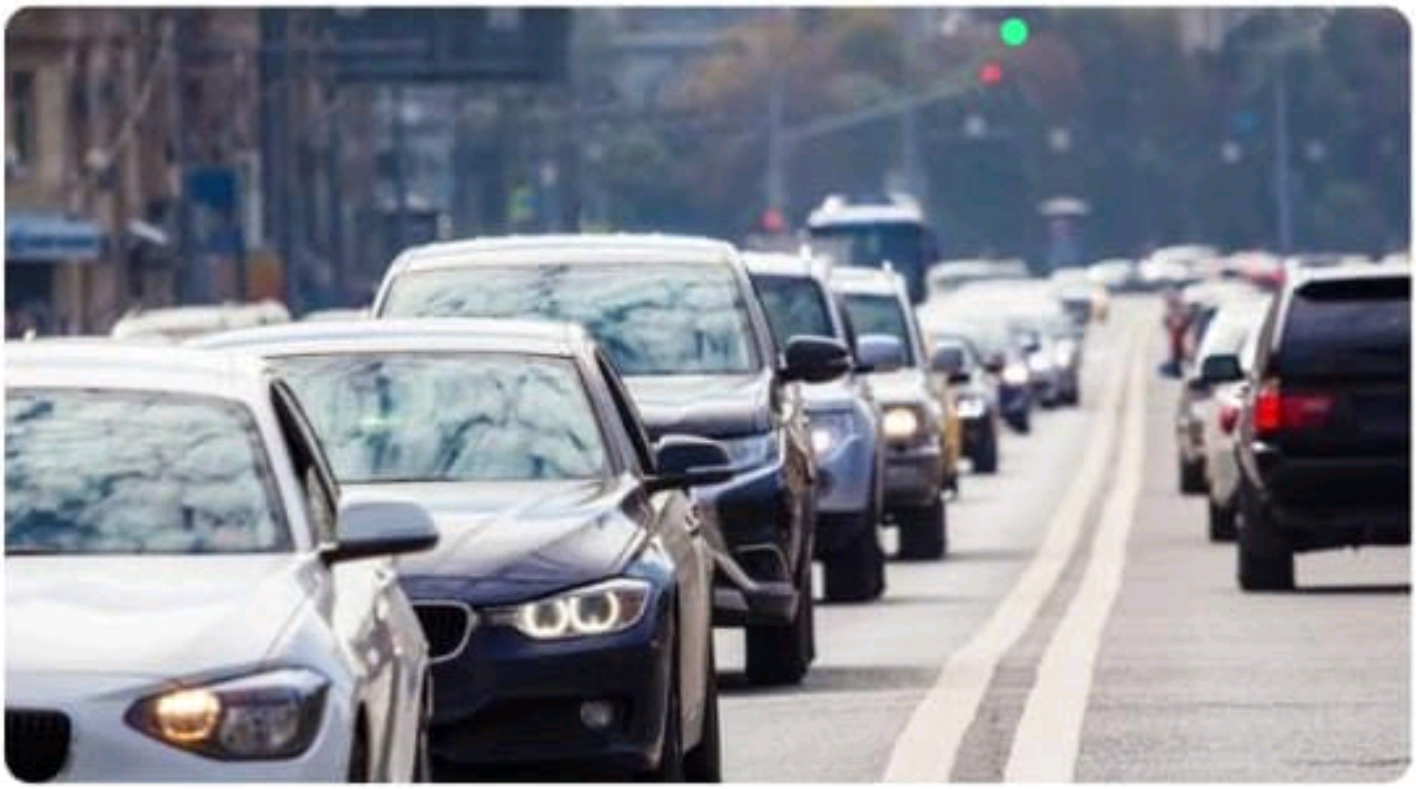
Smart IoT Solution for Resolving Traffic Jams

We helped implement an intelligent IoT-enabled traffic solution that brings together cars, people, and road infrastructure into a safe, efficient system

Internet of Things | Location Based Services | Transportation



Business challenge

Our client leads the world's mapping and location industries with the most accurate map data, smart traffic solutions, mobile- and automotive-grade navigation software development tools, and the Internet of Things for smart cities. Millions of drivers around the globe enjoy unique navigation experiences thanks to our client's HD maps, 3D rendering capabilities, intelligent routing, and timely map updates. Urban mobility app makers depend on our client's public transit, venue mapping, live traffic, and other data services and tools to make the lives of daily commuters and tourists more trouble-free. Our client's hybrid SDKs allow for building integrated apps that guide drivers to parking spots via in-dash navigation, then guide them by public transport or on foot via mobile devices to their final destinations.

The volume of traffic on European motorways is constantly growing, contributing to the probability and severity of traffic accidents and traffic jams. Drivers rely on road operators, smart traffic solutions, control centers to move them safely and quickly along motorways. Among the biggest problems that road operators face is road users' lack of real-time road and traffic awareness. This is caused partially by the absence of universal channels through which information on road hazards can reach the right road users at the right moment.

European road operators are on the lookout for alternative transportation technologies and a smart traffic jams solution to send prompt hazard alerts to road users and incident managers alike. Keeping these stakeholders well-informed will result in increased road safety, traffic performance, driver and passenger comfort, and ecological sustainability.

Possessing the necessary technology, ecosystem, and data, our client is collaborating with several European countries on Smart city solutions to traffic congestion. Intellias, as one of our client's key engineering partners on related workstreams and experience in IoT development services, was also concerned about the solution of traffic jam problem and was ready to contribute to the implementation of these cutting-edge road safety initiatives.

Smart IoT traffic control solution delivered

The pilot IoT-based smart data traffic solution that Intellias helps to develop has been designed to link vehicles, road infrastructure, and people through our client's cloud-based location platform and V2V, V2X, and V2I channels.

- Data is collected from car sensors, road cameras, traffic feeds, weather stations, and mobile devices.
- Data is processed locally in vehicles and transferred to and aggregated in the cloud.
- Processed data is then sent back with minimum delay to cars, drivers' smartphones, and regional road operators' traffic management centers as localized road safety messages.

Intellias is involved in developing the backend and frontend of this smart traffic solution that serves as the backend component for the traffic alert system.

Our client's collaborative location platform incorporates IoT in traffic management. We've become our client's core engineering partner for developing this platform. Our over team is broken into multiple workstreams, each covering its own area of responsibility. Intellias engineers help to conceptualize, test, and deploy the cloud-based, API-driven architecture that's data-type and source agnostic. Intellias has managed to bring this location

Currently, our teams cover the development of the location platform infrastructure based on the AWS stack, data services, map compilation pipelines, map validation and visualization components, and more.

The frontend of the IoT traffic management system is an Angular-based dashboard for incident managers working at regional road operators' traffic management centers. The dashboard visualizes the near real-time traffic situation atop an accurate road network map. This visualization is based on data that's aggregated, processed, and fetched from the location platform, including data on traffic, incidents, road signs, weather conditions, and hazard warnings. With this system, road incident managers get timely and accurate road and traffic warnings, enabling them to quickly respond to possible emergencies.

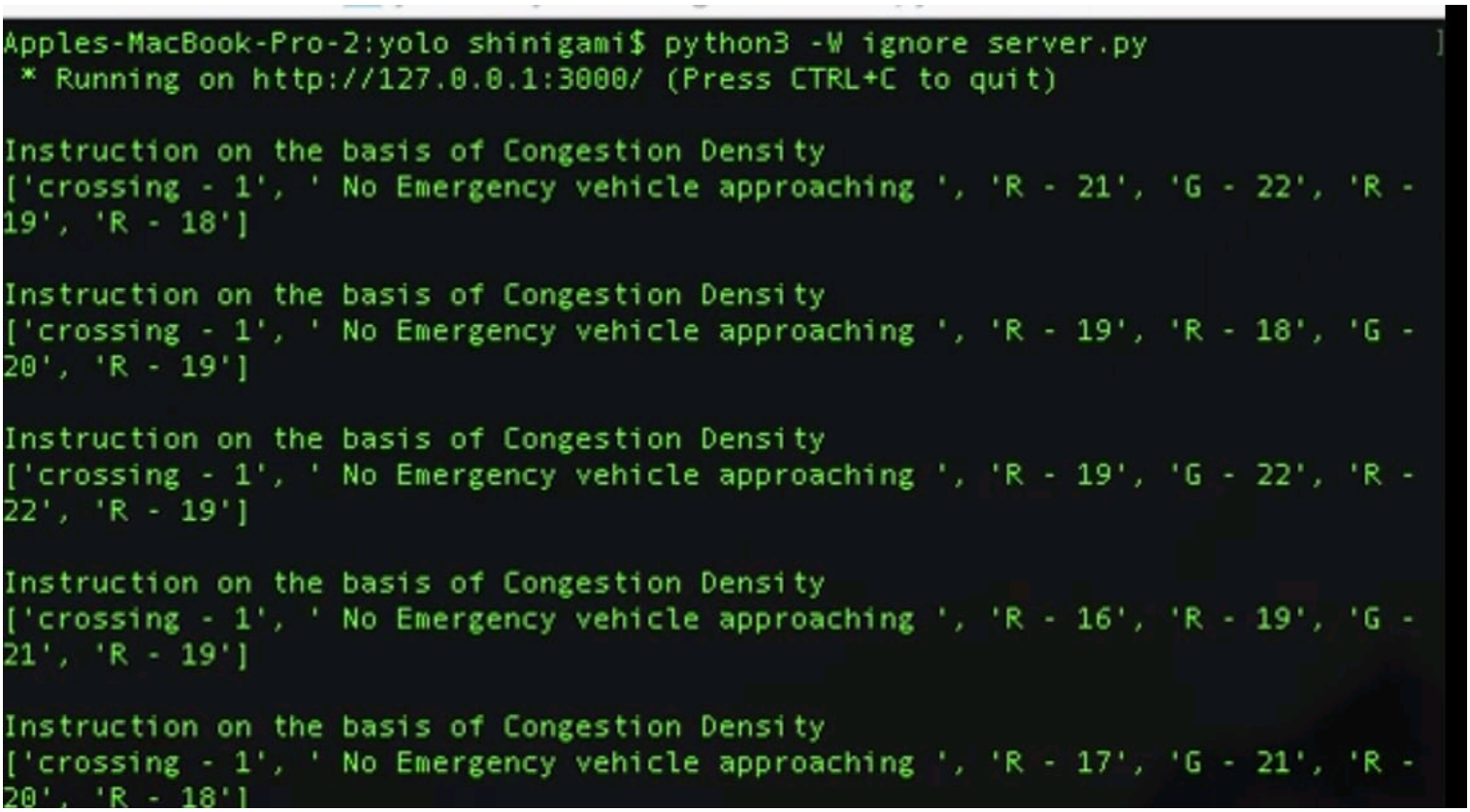
The Intellias team has also contributed to functionality for detecting hazardous driving conditions using data from vehicle sensors. By analyzing sensor data describing traction, road conditions, weather, characteristics of the road surface, and anomalies in vehicle behavior, driving hazards can be accurately identified. These hazards can then be shared among a fleet of connected vehicles as a warning to drive more cautiously at specific locations.

Business outcome

The pilot IoT traffic control solution was demonstrated to potential customers during an international traffic safety conference. The concept and its immediate benefits if put into production were highly appreciated by conference attendees. Once in full production, safety messages will inform both drivers and traffic management teams about road hazards, allowing for prompt response if needed. Traffic jam solutions are planned to be deployed to one of the European road operator's test facilities to validate the use of IoT in traffic management. It will be tested by 1,000 drivers on some of the busiest roadways in Europe.

The IoT traffic management system that Intellias is helping to develop will alert both drivers and incident managers about:

- Slippery road conditions
- Unfavorable weather
- Limited visibility
- Traffic accidents ahead
- Road obstacles
- Road work
- Traffic jams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Instruction on the basis of Congestion Density
['crossing - 1', ' No Emergency vehicle approaching ', 'R - 21', 'G - 22', 'R - 19', 'R - 18']
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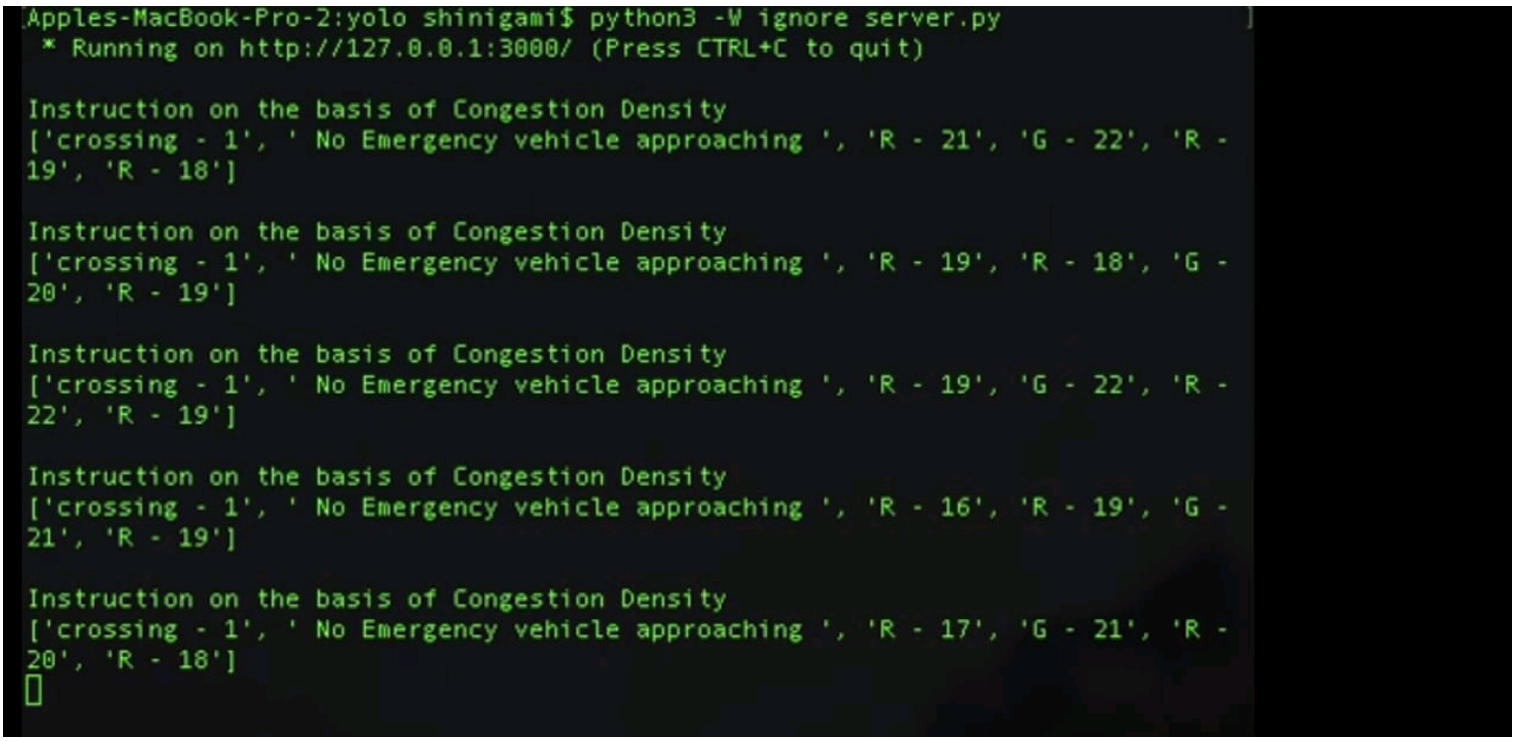
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