

CASE STUDY

Driving Road Safety Innovation: A Python-Powered Approach to Real-Time Monitoring and Intervention



OVERVIEW

The client is a leading university, developing products aimed at addressing societal issues for government agencies to identify bottlenecks and provide practical solutions.

CHALLENGES

For one of its prominent customers, an insurance company, the client sought a solution for real-time monitoring of environmental conditions, a common factor for road accidents.

Their existing system was part of a context-aware 'Safety Tolerance Zone' for on-road driving, within an intelligent Driver and Road Environment Assessment and Monitoring System (i-DREAMS).

Though comprehensive, the system lacked pictorial representation, hindering conclusive analysis and safety-oriented interventions by authorities to prevent drivers from operating too close to unsafe boundaries.

INDUSTRY

- Insurance
- Road Safety

SERVICES

- Real-time Data Monitoring
- Data Reporting
- Data Visualization
- Alerts

TECHNOLOGY

- Python
- API
- HTML
- JavaScript



SOLUTION

To address the lack of pictorial representation, Contata established a platform, using Python, to define, develop, test and validate a 'Safety Tolerance Zone'. We collated the data and framed it in the PDF document, elaborating Composite Road Safety Index (CRSI). This index served as a basis for comparing factors affecting road safety, providing a holistic view and helping determine variances in parameters, such as acceleration, deceleration, steering, and speeding of drivers defined in the "Safety Tolerance Zone".

The platform utilizes effective reporting mechanisms, collecting data through API calls, processing it, and then rendering HTML scripts to create PDFs, containing a graphical "Alert Report." These reports provide a clear visual representation of the state of drivers, aiding authorities in conclusive safety-oriented interventions. The report also includes calculations and interventions for interactions between drivers, vehicles, and the environment in challenging conditions. The solution ensures hundreds of reports can be processed sequentially to alert companies and drivers, preventing unsafe actions.

BENEFITS

No Third-Party Software

The solution avoids third-party software and solutions, relying on rendering HTML scripts with Python to form PDFs. This generic approach ensures flexibility and control in addressing the unique challenges posed by road safety without dependency on external solutions.

Real-Time Risk Mitigation

By continuously monitoring and assessing real-time risks, the project prevents drivers from operating too close to unsafe boundaries. This proactive approach, coupled with graphical reports, facilitates quick and effective safety interventions, reducing the risk of accidents.



Compliance

The Alert-Report, being a fully-featured document, enables insurance companies to focus on areas affecting accidents. It aids in risk reduction and ensures compliance with the "Safety Tolerance Zone," ultimately contributing to improved road safety.

Customized Interventions

The solution created new opportunities for the detection and designing of customized interventions, increasing awareness and upgrade driver performance, constantly and dynamically.

About Contata

Contata Solutions is a trusted leader in technology and digital innovation. Through our work in data engineering, data analytics, machine learning, marketing automation and app development, we deliver solutions that address complex problems in ways that are simple, insightful and impactful.

Our promise and value proposition to our customers is simple: we leverage our deep technical expertise and global presence to bring software products and data-driven decision capabilities to life.

Founded in 2000, Contata is a privately-held company headquartered in Minneapolis that serves clients globally from offices in the United States and India.