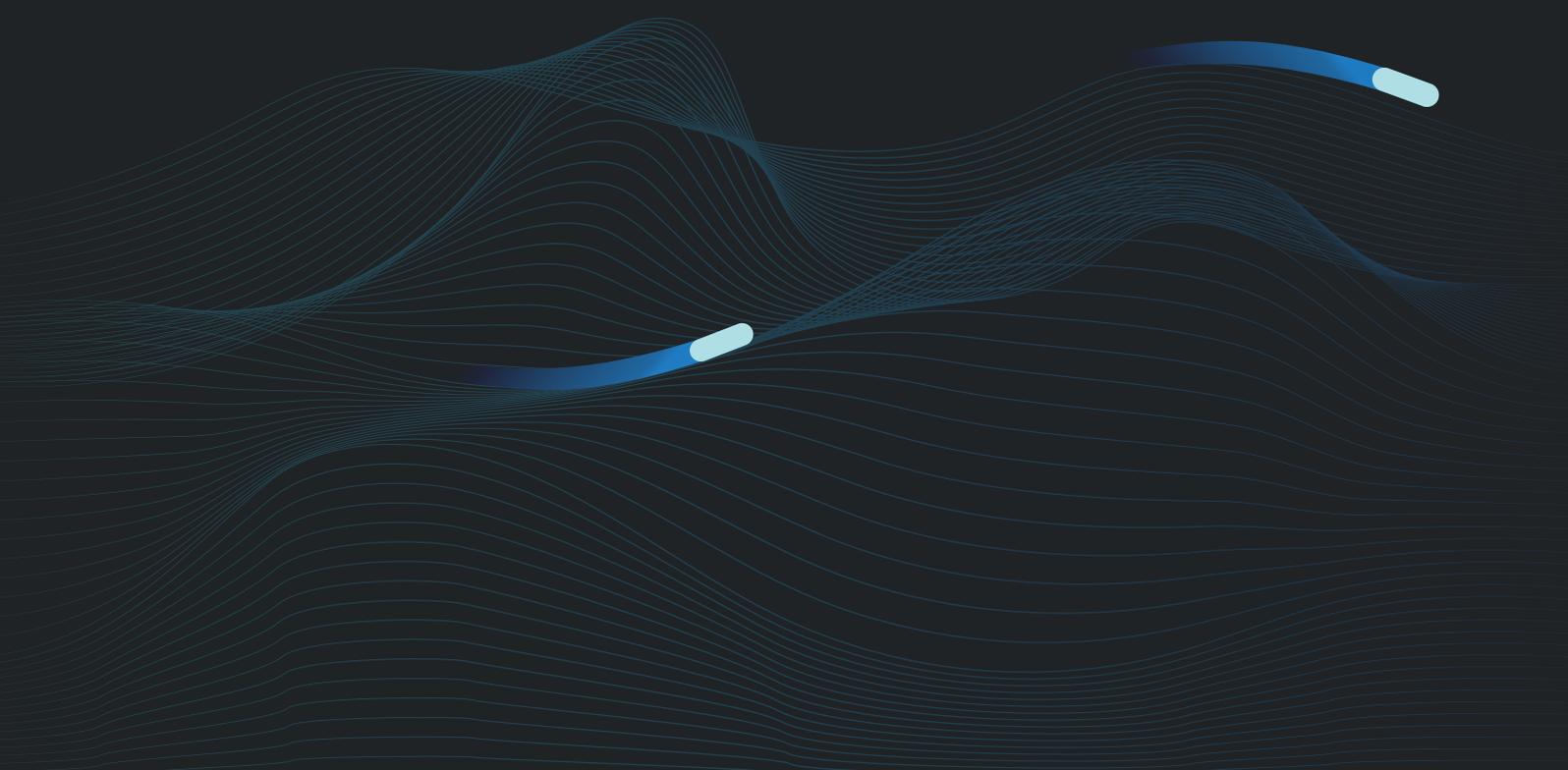




VALERANN

POWERED BY DATA. DRIVEN BY INSIGHT.



CASE STUDY

SEEING INTO THE FUTURE: VALERANN® & PREDICTING HIGH RISK EVENTS



OVERVIEW

The latest generation of intelligent transportation systems can process significant amounts of real-time and historic data to create highly accurate risk warnings for road operators. In this case study we look at how Lanternn by Valerann™ - underpinned by advanced artificial intelligence and machine learning – has provided highly accurate risk alerts to a European road operator, including predicting an accident hours before it occurred.

THE CHALLENGE

For highway authorities and operators reducing the risk of accidents is one of their biggest priorities. Every incident can bring traffic to a standstill and cost thousands in emergency response and clean-up. We also can't forget the human impact an accident can have on all those involved.

Predicting risk and identifying potential areas of concern along a highway is a complex undertaking with hundreds of factors and data points to consider. However, many road operators are simply not equipped with the necessary technologies to collect and process this information in real time, which is important for making effective decisions before and after events occur.

There is an answer to this challenge.

AT A GLANCE

Challenges

- For highway authorities and operators reducing the risk of accidents is one of their biggest priorities.
- Predicting risk and identifying potential areas of concern along a highway is a complex undertaking.
- Many road operators are simply not equipped with the necessary technologies to collect and process this data in real time.

As this case study will show, using historic and real time data sources, Lanternn by Valerann's™ sophisticated risk modeling algorithms can accurately warn road operators when the risk of an accident is high.

This enables operators to take preventative measures, including dispatching patrol vehicles or tilting cameras to closely monitor particular locations, automatically change speed limits and Variable Message Signs (VMS), as well as efficiently allocate traffic assets to risk hotspots.

This high accuracy has been proven on a European roadway where an accident occurred after our software raised a high risk alert in the area.

“Lanternn by Valerann™ uses AI and machine learning to analyze diverse data sources, which then generates a real-time risk profile for different stretches of road.

THE SOLUTION

The proprietary Data Fusion Engine that underpins Lanternn by Valerann™ uses AI and machine learning to analyze diverse data sources, which then generates a real-time risk profile for different stretches of road. In this case, the software was calculating the risk profile of a major European motorway on a rainy summer morning.

Valerann had access to a decade of historical accident and incident data for the motorway. From this information, a risk profile was created for the road at different times of the day and in various conditions, which would then be set against real time conditions to determine the current risk profile.

Actual conditions for the road were calculated by monitoring a plethora of data sources: weather data, legacy infrastructure, CCTV, radar loops, social media, connected cars, and information from crowdsourcing apps such as Waze and Google Maps.

By 8am UTC time on the day of the accident, Lanternn's risk modeling algorithm had calculated there was an elevated risk on one particular stretch of the road. Unusually heavy rain on the curved road, preceded by several very sunny days, combined with real-time traffic conditions, had together created hazardous conditions.



By 2pm UTC time, Lanternn by Valerann™ had received a report of an accident from Waze on the stretch of the road flagged as high risk. As the area was already categorized as especially hazardous, the unverified report was prioritized, and by using around 600 other data points the report was confirmed as true and another alert to the operator was sent.

“Deployment of the **Lanternn by Valerann™** solution meant that the traffic authorities could avoid unnecessarily sending patrols and deploying resources.”

Shortly after, the traffic controller could direct their camera to the area of the accident from which it was clearly identified by Valerann®'s vision system algorithm, which then started to calculate how many cars had stopped.

In total, Valerann®'s software technology presented the traffic controller with three clear and concise alerts:

- ① The elevated risk of an accident.
- ② The accident that subsequently occurred.
- ③ The location of emergency and other vehicles afterwards.

This is despite ingesting and processing hundreds of different data points, which would normally overwhelm a human operator.

CONCLUSION

Giving traffic controllers vital information, such the level of risk on their roads, without overwhelming them with unnecessary details, allows them to make quick and effective decisions. Essentially, it can empower them to better manage their resources to try to prevent tragic, disruptive and costly accidents from occurring in the first place and be able to respond quicker if they do.

For example, once a high-risk warning is issued, operators can decide to station a patrol vehicle on the relevant part of the road, as well as flag the high-risk conditions on the VMS, transmit messages through social media and Waze, or even directly to connected cars that have the relevant systems fitted. The operator could even make this an automatic workflow that is triggered as soon as a risk warning is issued.



In addition, if a road does not have any historical data, it can be taken retrospectively from sources such as Google Maps or Waze, which helps to train the AI model when it comes to understanding the probability of events and other factors that played a role. Similarly, the controller is not required to set up its own weather station as information is collected from comprehensive and highly-reliable weather data sources.

“Lanternn by Valerann™’s smart traffic management solution can fuse many data sources to create highly accurate real-time risk alerts for operators, without needing huge infrastructure investments.”

As Valerann®’s software is also natural language processing enabled, it can also leverage insights from one of the best data sources available: the intuition and knowledge of the road operator. This is achieved through inputs from the operators themselves using a user-friendly interface that will allow them to set rules on how the system should behave in certain scenarios.

As this case study demonstrates, Lanternn by Valerann™’s smart traffic management solution can fuse many data sources, including historic and open source, to create highly accurate real-time risk alerts for operators, without needing huge infrastructure investments.

