

News Release

For Immediate Release
February 21, 2019

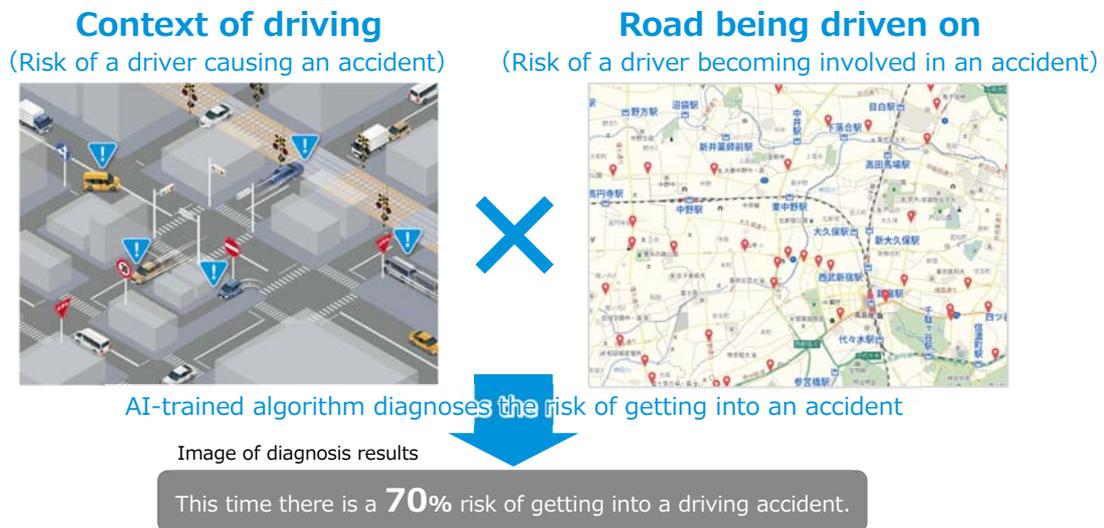
Pioneer Equips *Intelligent Pilot*, an ADAS Solution Utilizing Digital Maps, with AI Scoring Feature
Usable with smartphones in addition to communication-type event data recorders

The *Intelligent Pilot*, an ADAS solution offered by Pioneer for Japanese market predicts the risk of an accident in real-time based on various data including digital maps, probe data, accident-prone spots and weather as well as driver tendencies, and alerts or warns the driver only when there is a high risk of an accident.

Pioneer has now equipped *Intelligent Pilot* with *YOUR SCORING*, an AI scoring feature that uses digital map data and GPS location information to diagnose as far as potential risks for each driver. Unlike existing methods which only make diagnoses based on dangerous behavior*¹ detected from the degree of acceleration, since *YOUR SCORING* considers tendencies to comply with traffic rules and actual traffic violations*² in the context of driving behavior as well as accident-prone locations and terrains in terms of the road being driven on, it is able to diagnose the potential risks of individual drivers, including the likelihood of an accident occurring*³.

Additionally, with the use of *Intelligent Pilot SDK*, the software development kit allowing *Intelligent Pilot* features to be added to customers' services, many customers will be able to use the AI scoring feature on their own smartphones. Furthermore, if combined with a compatible dedicated device (communication-type event data recorder, etc.), more advanced driving assistance is also available.

【Outline of *YOUR SCORING*, AI scoring feature】



- 1) Using digital map data and location information measured with GPS, tendencies to comply with traffic rules and traffic violations*² are identified based on past driving behavior
- 2) This information is linked with information on accident-prone locations and terrains identified using proprietary technologies*⁴ based on information concerning the road being driven on
- 3) Using an algorithm created through AI learning based on the linked information, the potential risk is diagnosed on a per-driver basis, including the likelihood of the driver getting into an accident.

Moving forward, Pioneer will further expand the functionality of *Intelligent Pilot*, such as utilizing this AI scoring feature and adding functions to provide alerts and warnings better optimized to individual drivers. At the same time, Pioneer will continue to pursue greater coordination with various automotive industry companies as part of efforts to reduce traffic accidents. Pioneer will also propose services utilizing telematics for overseas markets.

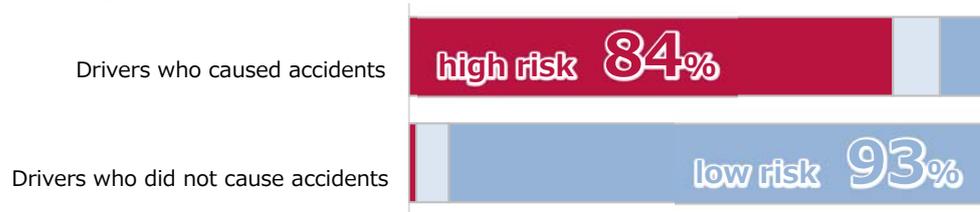
- *1 Sudden braking, steering or acceleration, etc.
- *2 Failing to stop at stop signs, excessive acceleration, violating one-way traffic restrictions, etc.
- *3 The method used for the scoring feature is the subject of a pending patent application.
- *4 Utilizes a proprietary accident risk platform that links digital map attribute data such as traffic lights and curves with data on past accident spots and spots where sharp braking often occurs using GIS technology, and combines this with time-of-day and weather information to predict accident-prone locations and other risks.

■ **Background to Development of the AI Scoring Feature**

In the course of considering ways to further enhance the accident reduction effects of *Intelligent Pilot*, we focused on research data indicating that approximately 80% of people who have caused fatal traffic accidents had committed traffic violations within the previous five years^{*5}. We determined that in order to prevent accidents, it would be necessary to properly evaluate driving behavior, such as by ascertaining behavior that constitutes traffic violations. Given this, with the cooperation of Professor Kazuya Takeda of Nagoya University and their insight into the modeling of driving behavior^{*6}, we were able to identify the traffic violations that correlate highly with traffic accidents and define the behavior that constitutes a traffic violation. These findings were then incorporated into the determinative algorithm of the AI scoring feature.

■ **Verification Data for the AI Scoring Feature**

The AI scoring feature was used to diagnose driving data from drivers who actually caused accidents and those who did not. The results showed that 84% of drivers who caused accidents had been diagnosed as “high risk,” and 93% of drivers who did not cause accidents had been diagnosed as “low risk.”



* Based on Pioneer research conducted in February 2019. These are the results of diagnoses made from the running data collected by Pioneer from April 2017 to September 2018. The applicable data in each category was extracted at random (159 records of each).

*5 Osaka Prefectural Police: From results analyzing the correlation between persons involved in fatal traffic accidents and their history of past traffic violations

*6 Profile of Professor Kazuya Takeda



Nagoya University Institutes of Innovation for Future Society
 IEEE ITS Society BOG Member (Director)
 Human Machine Harmonization System Consortium (HMHS Consortium) Research Supervisor

Professor Takeda has developed a database of the driving behavior of various drivers on actual roads, analyzed and identified the characteristics of driving behavior in individual drivers, modeled the driving behavior, and developed an individualized driving assistance system tailored to individual drivers.