SCIENCE F(R)ICTION: HOW ARTIFICIAL INTELLIGENCE HELPS TO PREDICT ROAD CONDITIONS

Dr. Jonathan Bonnet, Product Owner – Continental CVS AE France
~ 7% of all accidents with personal damage due to road weather conditions

No predictive road surface condition information by onboard systems

Driving features must be deactivated based on weather conditions

Global weather forecasts are not precise enough

**Number of connected vehicles might be too low for crowdsourcing**
Machine Learning Models
Automatically Learn from Data

Traditional programs

IF RAIN THEN WET ...

Programmed rules

Computer

Output

WET

Data

Machine Learning

WEATHER FORECAST

Data

Target

DRY WET ICY

Computer

Model

WEATHER FORECAST

Output

DRY WET ICY

MODEL

Computer

WET
Road Surface Condition Service

Model Inputs
- Enhanced weather forecast
- Contextual map data
- Vehicle data (future evolution)

Machine Learning Models
- Continental Cloud

Training/validation data
- For model training only
  - Road surface class
  - Road temperature

Model Outputs
- Road surface condition class: dry, wet, heavy wet, icy
- Confidence level
- Road temp
- Water height
- Friction value

New prediction:
- 15 min frequency
- 200 m resolution

Model training
Service in production

Dr. Jonathan Bonnet, Product Owner – Continental CVS AE France © Continental AG
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Live Demonstration
### The Service Enables Several Use Cases

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#### Results on European highways
- Accuracy: **75.8%**
- Risk: **1.4%**

#### Results with OEMs
- For air temperatures < 4°C:
  - Accuracy in wet or icy situations: **93%**
  - Availability: **+47%**
THANK YOU!