Better Driving via Machine Learning

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Machine Learning in Transportation Workshop
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A look at the Auto Insurance Industry

Auto Insurance Industry in transition

Machine Learning in Auto Insurance Industry
- Machine Learning for Better Driving
- Risk Reduction via Machine Learning
- Faster Claims Processing

Look ahead
Recovering Economy, More Driving, More Collisions, More Fatalities

Source: Labor Data (BLS), NHTSA
Auto Insurance Industry costs are going up

Bodily Injury: +9.6%
Property Damage: +14.7%
Personal Injury Protection: +18.4%
Collision: +11.1%
Comprehensive: +11.0%

Rise in losses from 2014 to 2016

Real-Time Data enabling smarter driving

- Location
- Accelerometer
- Gyroscope
- Bearing
- Atmospheric Pressure
- Engine RPM
- Speed
- Accelerator Pedal
Machine Intelligence — your in car driving coach

“Please slow down”

“You are approaching a dangerous intersection”

“Please be careful switching lanes”
Deploying Real-Time Machine Prediction

1. Ingest
   - Raw Data

2. Modeling
   - Feature Engineering
   - Model Training
   - Model Testing

3. Production
   - Model Packaging
   - Model Deployment

4. Model Deployment
Providing value added Services to customers

Daily Driving Summary

- Trips & Miles
- Smart Driving Points
- Speeding Incidents
- Erratic Driving Incidents
- Aggressive Driving Incidents
- Hazards Avoided

Recommendations

- Slow down on Main Street on your way to Work
- Avoid Michigan Ave. in the evening
- Stay in lane during rush hour traffic on Rush Street
Pay how you drive (PHYD) via Predictive Billing
Real-Time data and Machine intelligence in Claims resolution

- Policies
- Risk Profiles
- Customer Records
- Past Claims

- Telematics
- Weather
- Infrastructure

Resolution → Claim → Assistant → Machine Learning
What is next for Machine Learning in Auto Insurance?

• More data:
  – Dash Cam Video Analytics
  – Wearables

• Better Algorithms:
  – Deep Learning
  – Artificial Intelligence

• In Car Applications:
  – Geo Fencing
  – Personal Assistant
  – Prescriptive Repair