

A Holistic Approach for Analyzing the Risk of Temperature-Controlled Supply Chain



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- Team ADDY -



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78.64% accuracy

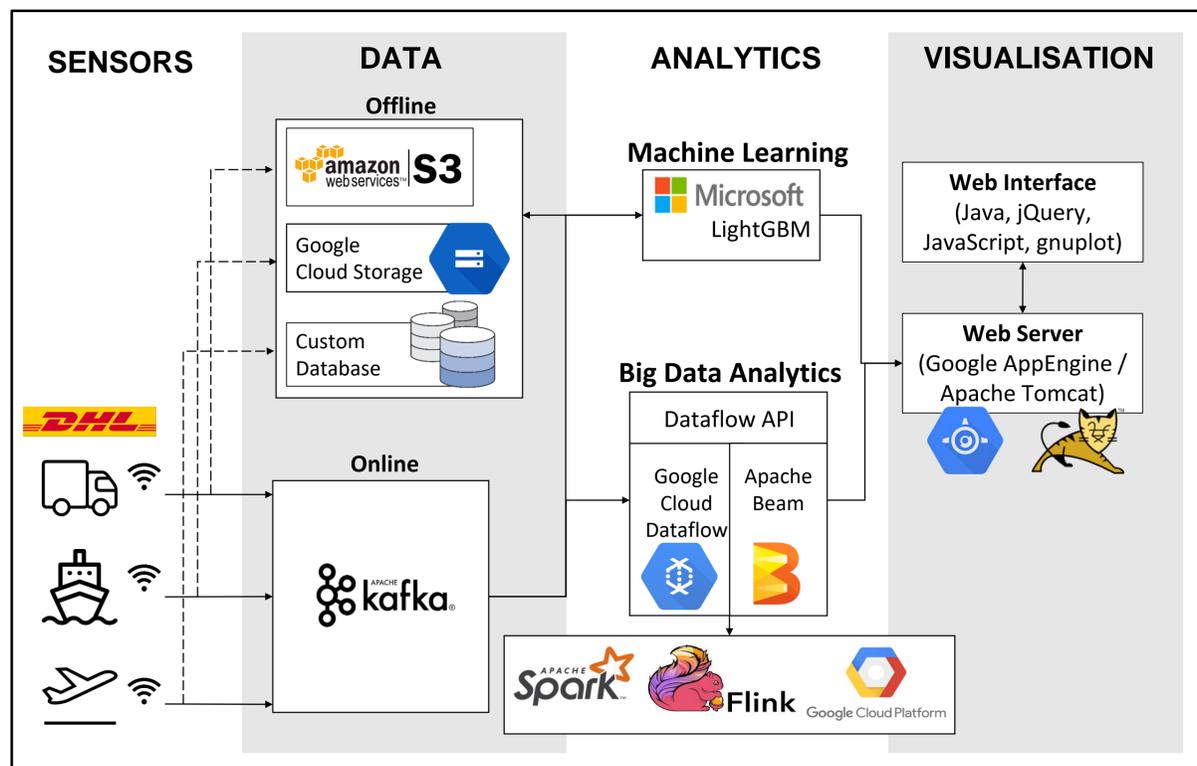


Figure 1. Architecture

Modeling methodology

- 75%-25% random train-validation split
- Keep a single entry per *Shipment ID*
- Directly predict the deviation (78.64% accuracy)
- Predict transit time (76.74% accuracy)
- Light model with 6 features (78.64% accuracy)
- Heavy model with 20 features (80.17% accuracy)
- Use light model for online prediction

Observations

- Dataset contains ~79k useful records
- Dataset is well balanced (34,941 records with deviation out of 78,899 records in total)
- Among others, destination country is a good indicator for the occurrence of deviations
- Transit time prediction implies a *uni-modality* assumption

Table 1. Accuracy and log loss for different models

Model	Accuracy [%]	Log loss
LightGBM	78.64	0.6537
CatBoost	77.75	0.6764
SkLearn (Random Forest)	78.58	0.7558

Table 2. Accuracy and log loss for single vs. separated models

Model	Accuracy	Log loss
Single LightGBM	78.64	0.6537
Separated LightGBMs	78.59	0.6656

MEET THE TEAM



Dumitrel Loghin has a PhD in Computer Science from National University of Singapore, with a focus on energy-efficient data-parallel processing. He developed a fast MapReduce framework running on GPUs during his PhD. Dumitrel has many publication in conferences on parallel and distributed systems.



Dan Banica has a Master degree in Artificial Intelligence from University Politehnica of Bucharest and has multiple publications in Computer Vision. His research focused on using machine learning techniques to perform semantic segmentation in RGB-D images, on which he won a challenge held during the prestigious CVPR conference.



Andrei Lupuleasa is a Computer Science student from Romania, soon to start a new programme in the USA. Andrei enjoys developing web and mobile applications.



Yamuna Yeo is a marketer, with a degree in mass communications from Nanyang Technological University. While not a tech person, she focuses on user and business needs.

