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Business Domain
GIS and Geospatial, Railway

Project Type
Dev Team

Intetics Solution Empowered a Big European Railway Company to Detect Infrastructure Issues and Automate the Inventory Processes, Saving 30% On Costs

Client

The Client is a state-owned railway company, which is the largest railway operator and infrastructure corporation throughout the EU.

Project

Development of a Machine Learning (ML) model that automatically detects main railway-related objects on drone images with 90% of accuracy and improved speed of quality checks, saving 30% on costs compared to a manual approach.

Objective

The Client needed to develop a solution in order to automate the inventory process and save costs, reduce human involvement and human-related errors, eliminate the effects of light and weather conditions, minimize accidents in order to protect the health of passengers/staff, and reduce financial and reputation risks.

Team Reinforcement

The Client required the Remote In-Sourcing Team® to develop industry-specific ML algorithms and train ML models. Intetics created a team of ML engineers highly experienced in the railway domain. The business analysis phase helped the Client to identify all the technical requirements.

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Challenge

The Client is a big-name state enterprise, having a 45% share of railway transportation in one of the biggest and economically strongest EU countries.

The Client needed to effectively use time and resources to detect any kind of defect (under various time and weather conditions, etc.) that may arise throughout the railway network.

The Client wanted to save costs on the development and looked for a reliable partner to perform the project from concept to implementation. Intetics delivered the full cycle of development - from design to development, testing, and support.

Quick Facts

- Validation dataset maintaining 90% accuracy
- Saving 30% of costs thanks to automation
- Developed and implemented 100% of the Client's needs
- Ongoing cooperation to keep developing the Client's business

Technologies

Python / PyTorch / Pytorch_lighting/ torchmetrics / torchvision / Shapely

Solution

01

ML model automatically detects railway-related objects with 90% accuracy, which is a very high value in similar solutions.

02

Automation of the inventory process allowed the Client to decrease human work and save 30% of admin and salary costs.

03

Inventory of railway infrastructure taken by the Client is no longer dependent on weather or light conditions.

04

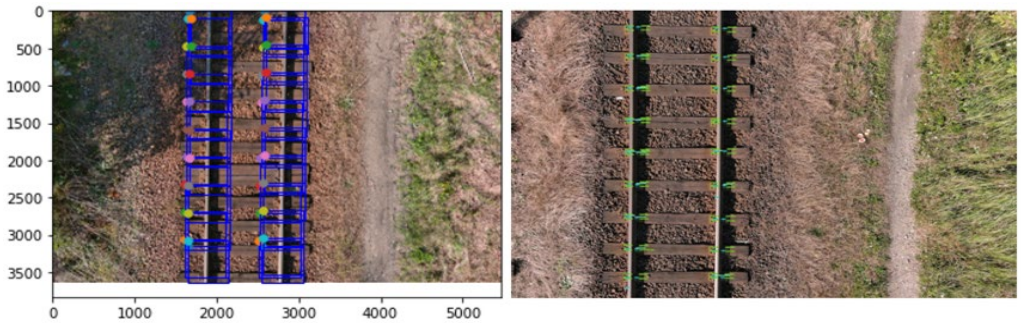
The solution allows the Client to decrease accidents on the road, protecting human health and the company's reputation.

05

The Client saved 30% on development costs, thanks to the Remote In-Sourcing Team's® deep knowledge in the related domain.

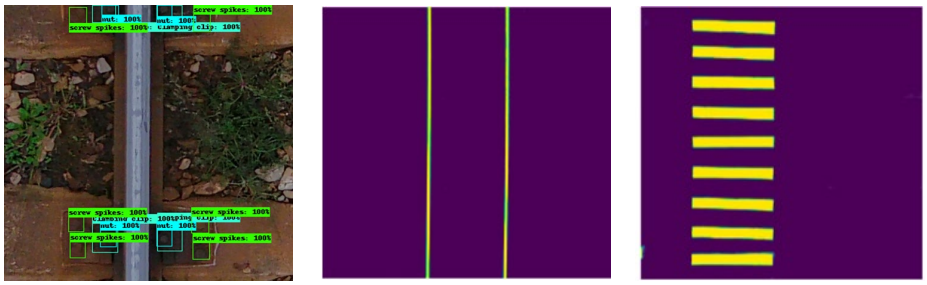
06

The interoperability of features allows the Client to detect railway failures timely and take appropriate measurements to allocate necessary resources for railway infrastructure maintenance.



Pieces of the image used for detection

Detection expanded to the full image



Client Reference

“We have maintained high-quality standards, and the implemented solution has improved important indicators, digitizing the quality of the infrastructure. We appreciate the work the Intetics team did for us.

Benefits and Results

- 90% accuracy when automatically detecting railway objects on drone images.
- Significant increase in quality, speed, and efficiency of the inventory process, thanks to the automation, as well as a decrease in the number of accidents, thanks to timely conducted inventory and maintenance.
- The Client obtained the sophisticated solution using cutting-edge practices in the shortest possible period of time and saved 30% of the development costs.
- The successful Client-Intetics cooperation is still ongoing, as Intetics has specified and offered several ways to continue developing the Client’s business.

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Techstack:

Python, PyTorch, Pytorch_lighting, torchmetrics, torchvision, Shapely

Team: 6

Project Manager, ML engineers, Frontend Dev, Technical Lead