

Internship/Thesis - Object and Hazard Detection in a Rail Context

Description

New trains are equipped with a lot of multimedia hardware: these are not only there to enrich the experience of the travelers on the train, but are also used to give the personnel on the train a broader environmental awareness: by placing high resolution cameras on strategic places, the drivers and train guards can see what happens inside and around the train.

These video feeds are not only used for a live view, but they are stored for analysis after an incident has occurred. In this thesis/internship Televic Rail wants to investigate how the rich media already present can be used for both object detection and hazard detection.

Current cameras often already provide features for e.g. object detection (lost luggage), in this context we want to investigate if we can avoid tragic accidents by detecting objects on rail crossings, rail obstructions or people walking on the tracks.

Depending on the progress, we want to investigate if possible dangerous situations can be detected before they occur (e.g. a moving car perpendicular to the direction of the train).

This thesis will use GStreamer and ONNX (Open Neural Network Exchange) [1].

https://fosdem.org/2026/schedule/event/RCTDG3-machine_learning_in_gstreamer_frameworks_tensors_and_analytics/

About Televic Rail

With over 30 years of experience in designing, manufacturing and maintaining on-board communication and control systems, Televic Rail is a leading, trusted partner for railway operators and train builders worldwide.

Its Passenger Information Systems and Control Systems are high quality, tailor-made solutions that offer the flexibility, user-friendliness and stability that our clients ask for. Our various types of on-board control systems such as our bogie monitoring systems are innovative, yet reliable products designed specifically for the railway business.

Trains and trams all around the world are equipped with Televic Rail solutions, from New Zealand to Canada, from China to the United States, from India to Belgium, England and France.

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Nature of the work				
Level	Keywords	Type of work	Location	Num. of students
Master	Software	Research: 30% Implementation: 50% Experimentation: 20%	In the field, Televic, University	1 or 2