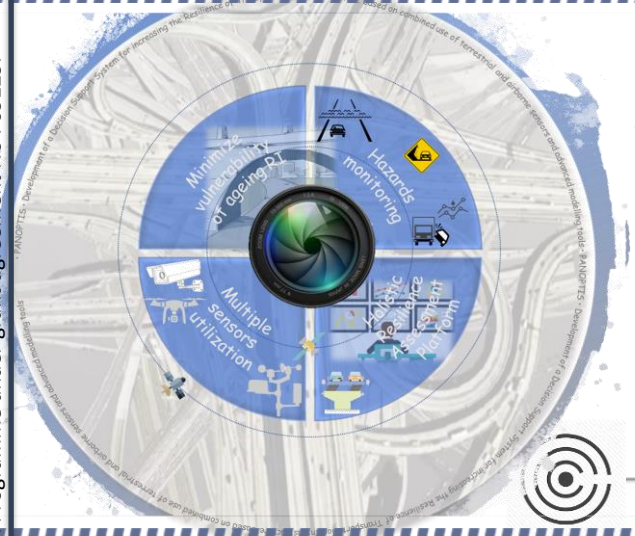
PANOPTIS

Newsletter N° 3 - May 2020



Development of a Decision Support System for increasing the resilience of transportation infrastructures based on combined use of terrestrial and airborne sensors and advanced modelling tools

Modern technologies in transportation infrastructures monitoring.

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National Technical University of Athens
UNIVERSITY OF TWENTE.
ITC FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

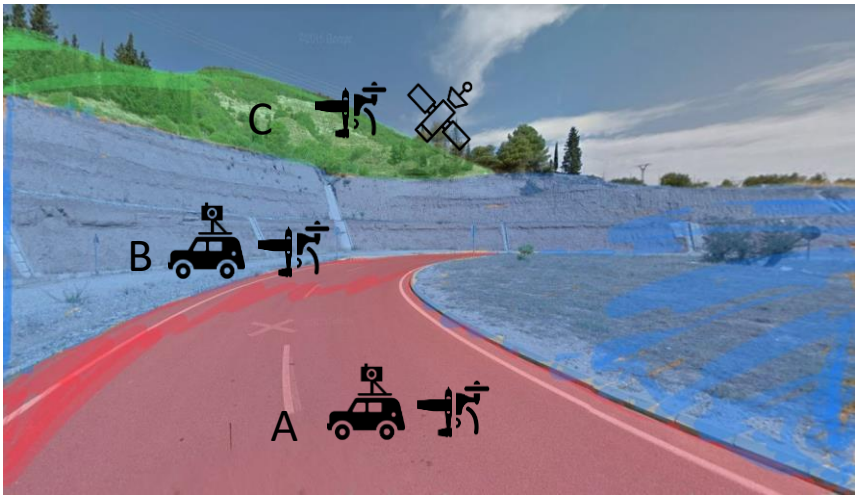
Supporting the Operators

Drone Inspection

Public Safety Agencies

Multi Hazard Risk Assessment

The road corridor is divided into three distinct monitoring levels: A) the road surface, B) adjacent RI objects and C) adjacent RI areas. PANOPTIS platform is capable to handle simultaneously all the above .



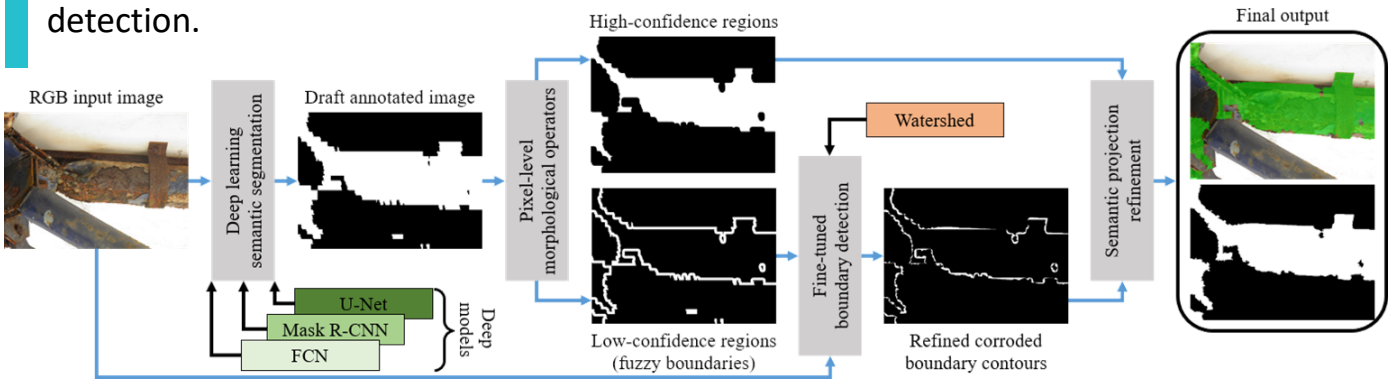
Summarizing:

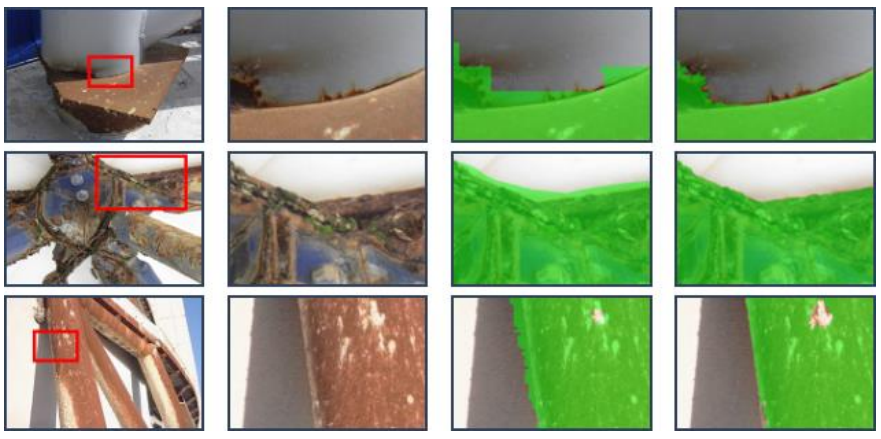
- **Current monitoring frameworks are non-holistic**
- **Advances in Remote Sensing Technologies: Satellite, UAVs, Mobile Mapping Systems**
- **Advances in Image Analysis and Deep Learning frameworks**
- **Non-dynamic and dynamic conceptual monitoring framework**

Deep learning models

Reduction of natural disaster-related fatalities through preventive information, hazard awareness, and disaster relief is at the core of risk prevention and crisis management policies. PANOPTIS employs innovative computer vision methods and new sensing capabilities for damage diagnosis of RIs (e.g. tunnels and bridges), by making use of ground and UAVs respectively.

Corrosion detection on metal constructions is a major challenge in civil engineering for quick, safe and effective inspection. Deep learning can be used for pixel-level detection.





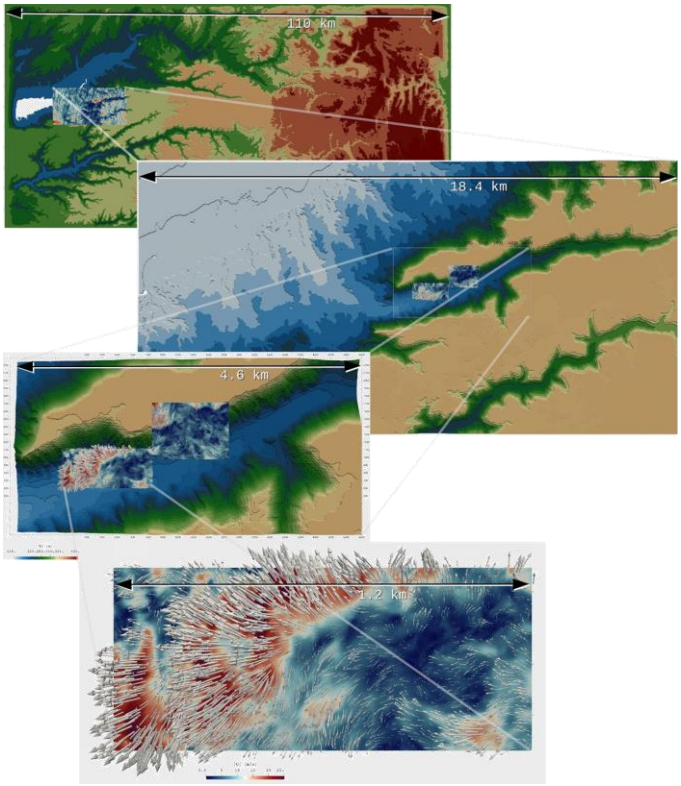
RGB image | Focus area | Model output | Refined output

Summarizing:

- Advanced detection mechanisms
- Scene understanding
- High accuracy
- Robust to noise
- Easy deployment
- Open source solution

Weather Impact

Microclimate stations are used to acquire data of the microclimate conditions at specific spots. PANOPTIS ecosystem utilize such stations to facilitate the condition monitoring in specific areas.



Data that is gathered:

- Air Temperature
- Air Humidity
- Wind Speed
- Wind Direction
- Solar Radiation
- Precipitation

The reliable quantification and mapping of climate and atmospheric impact for the targeted sites can be beneficial in multiple ways

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