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Welcome to the third newsletter of HERON

Dear Reader,

HERON project's consortium is pleased to welcome you to the third newsletter of our work on Improved Robotic Platform to perform Maintenance and Upgrading Roadworks.

The project has reached its second year of implementation. Stepping on the end-user needs and defined requirements, HERON has progressed and achieved several goals and objectives, involving the technical work packages.

The contributions focus on the development of AI-based algorithms & tools for fast and robust defect detection, establishment of a motion & high-level planner for automating robotic arm interaction, and the design of a small and flexible UGV unit, capable to operate in various environments.

The current and the following newsletters will offer readers an opportunity to take a deep dive into the technical work of HERON. We will start with the work over end-user needs and performance indicator metrics, and sequentially cover other work packages in subsequent editions.

As usual, the newsletter will also inform you about past and upcoming events/activities of HERON, inviting you to join connect with us.

On behalf of HERON consortium, we wish you a pleasant read.

HERON Coordinator

ICCS

About HERON

Robotics, Artificial Intelligence and Augmented Reality are creating new opportunities and benefits for society. They can prove immensely useful for road transport infrastructure. On one hand, they can improve occupational safety, create a healthy working environment for road workers and reduce fatalities due to accidents and toxic fumes. On the other hand, they can also reduce traffic disruptions due to maintenance works and decrease repair costs.

In this context HERON aims to develop an integrated automated system to perform maintenance and upgrading roadworks, such as sealing cracks, patching potholes, rejuvenating asphalt, autonomously replacing CUD elements and painting markings. HERON also intends to support the pre/post-intervention phases by facilitating visual inspections and helping dispense/remove traffic cones in an automated and controlled manner.

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HERON USER NEEDS ASSESSMENT - WORK PACKAGE 2

The main objective of this technical work package is to create a link between end-users needs and technology providers. This is important, as it will help project results to directly answer the needs of end-users. The project results will also be taken up and accepted by users more easily.

To achieve this, use cases and their specifications have been defined in close collaborations with end-users. This process also involved an analysis of current maintenance and inspection procedures for traffic cones placement/removal, pothole repair, crack sealing, inventorying tasks etc. Key elements of the HERON system architecture were also structured to guide and orient the project development.

After assessing existing automated systems used for these kinds of operations and functionalities, a draft system architecture has been proposed to ensure compatible, innovative and automated workflows, while complying with existing sensors, platforms and decision-making procedures.

Work is still ongoing in this work package to integrate decisions taken in other technical work packages of the project. This will result in a final system architecture. In parallel, performance indicators are also being defined, to be compatible with current inspection and maintenance works and to track HERON achievements.

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HERON TECHNICAL WORK PACKAGES

In parallel to the definition of user-needs, HERON has also launched other technical work packages of the project, which will focus on the development of AI-based Algorithms and Tools as well as Motion and High-Level Planner for HERON Automated System. The work on HERON

Robotic Platform as well as Communication and Networking solutions will also be launched soon.

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HERON technical visit and meeting with TRANSPOLIS

As a pilot, HERON will showcase the use of a robotic platform for inspection and upgrading of roadworks (sealing of cracks, road marking, potholes etc.). The pilot will be organized using the facilities and ground provided by **TRANSPOLIS** a test and study center in France. For this, Université Gustave Eiffel (UGE) a founding member of TRANSPOLIS and a HERON partner held a technical field visit and a meeting with with TRANSPOLIS management team on 22 July 2022.

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HERON AT INTERNATIONAL CONFERENCES BEYOND AND ICONHIC

The second edition of the International conference **BEYOND** was organized in Thessaloniki between 29 September - 1 October 2022. HERON was presented at the conference by project partners SATWAYS Ltd.

SATWAYS Ltd. and Université Gustave Eiffel (UGE) also presented HERON at the 3rd edition of **International Conference on Natural Hazards and Infrastructure (ICONHIC)** held in Athens from 05 to 07 July 2022.

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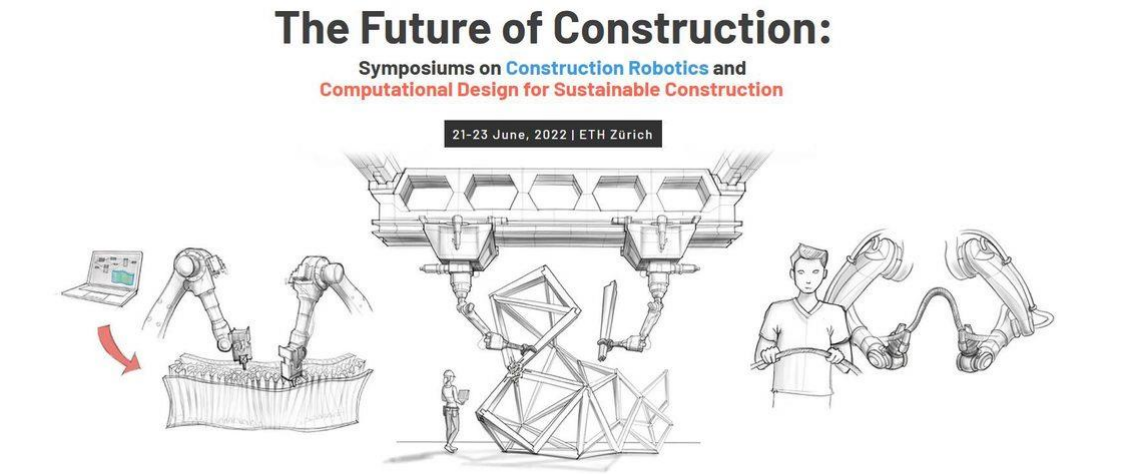
HERON PRESENTED AT THE FUTURE OF CONSTRUCTION SYMPOSIUM

A poster on HERON research was presented at the Future of Construction symposium held in Zurich from 21 to 23 June 2022. The poster focused on the research being conducted under Work Package 4 of the project, focusing on manipulation of granular materials like sand/bitumen used for potholes.



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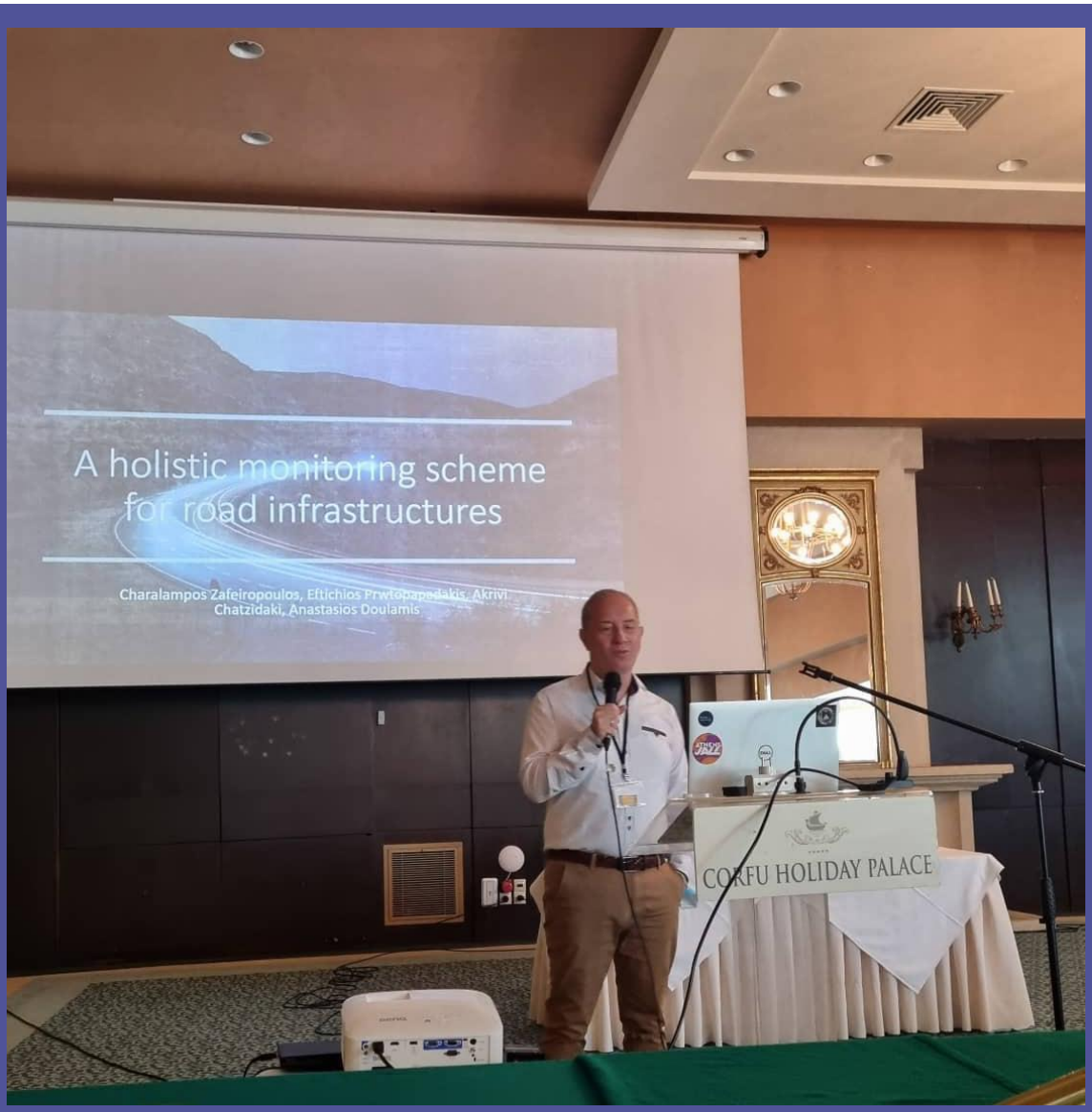
HERON PAPERS PRESENTED AT PETRA

HERON presented two papers at the the Pervasive Technologies Related to Assistive Environments (PETRA) conference held on 29 June to 1 July 2022 at Corfu. The papers were on the topic of "Robotic Maintenance of Road Infrastructures: The HERON Project" and "A holistic monitoring scheme for road infrastructures".



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Around Europe and beyond

Future of Roads - Industry turns to technology to enhance road worker safety

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Robotic platform in inspection, maintenance and construction

- The use of robotic platforms is spreading to more and more sectors.

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Mobile edge intelligence and computing for internet of vehicles

- The Internet of Vehicles is an emerging paradigm, driven by the latest developments in vehicle communications and networking.

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PROJECT IN SPOTLIGHT - PANOPTIS

InfraROB is a European Union's Horizon 2020 funded project (09/2021 – 02/2025) which aims to reduce workers' exposure to live traffic and construction machines, increase the availability of the transport network, reduce the cost of repetitive tasks, and increase the safety of road users by promoting significant advances in automating, robotising and modularizing the construction, upgrade and maintenance of the road infrastructure.

Upcoming Events

- HERON will participate in the Transport Research Arena (TRA) Conference to be held in Portugal (13-17 November 2022), in collaboration with projects INFRAROB and OMICRON. **READ MORE**

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 955356.