



Co-funded by  
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# ROBOSAT

AUTONOMOUS ROBOT NAVIGATION IN THE  
WILD USING SATELLITE-BASED 3D  
GEOGRAPHICAL INFORMATION

**Exploring the Alps and forests, bringing autonomously collected data to the world — open and accessible.**

In the **ROBOSAT** project we develop a scalable MultiGIS high-quality data-collection platform through the use of a quadrupedal robot, equipped with multimodal sensors (including i.e. GNSS, camera, lidar) and an I/Q data grabber that can autonomously perform long-distance missions in challenging environments. With MultiGIS data fusion we provide increased accuracy and robustness of GNSS algorithms. In addition, we aim to build an a novel large-scale open-access MultiGIS data storage system with automatic labelling.

	Prof. Elena Simona Lohan (Coordinator) Prof. Jari Nurmi	GNSS, wireless positioning, sensing & communications, RF fingerprinting, interference mitigation
	Dr. Joaquin Torres Sospedra (PI)	Computer science, database management, machine learning
	Prof. Marco Hutter (PI)	Automation, mapping, control theory, legged-robot research
	Assoc. Prof. Irina Mocanu (PI)	Machine learning/AI, robotics, exploitation

9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



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AND COMMUNITIES



13 CLIMATE  
ACTION



15 LIFE  
ON LAND



## Scientific & Technological Impact

We deliver high-quality, multi-dimensional sensor data (GIS, GNSS, RGB-D, etc.) along with novel tools to advance research and commercial applications. Open-access databases and algorithms will directly contribute to applications of GIS research in unconstrained environments.

## Transversal Impact

Our multi-dimensional data collection in unstructured terrains (mountains, forests) enables applications in forestry, environmental monitoring, and search & rescue.

## Economic & Societal Impact

Through the development of improved skills for mapping and navigating in unstructured environments, autonomous machines will enhance mapping and navigation in rural areas, supporting logistics and offering solutions where conventional therapy or health aids are not feasible.

## Educational Impact

Results will be shared through publications and events, while students at all levels will gain hands-on training and experience.

## Workforce Impact

ROBOSAT partner universities will train new professional engineers to tackle multidisciplinary challenges in wireless navigation, robotics, autonomous systems, GIS, signal processing, ML/AI, and database management.

## Strategic Impact

Robust GIS-GNSS algorithms for interference mitigation strengthen critical infrastructures, addressing challenges posed by Europe's current geopolitical context.

More information about the ROBOSAT project:  
Coordinator Simona Lohan, Tampere University  
[elena-simona.lohan@tuni.fi](mailto:elena-simona.lohan@tuni.fi)