

# VALIDATED MOTION PLANNING FOR INDUSTRIAL ROBOT ARMS

VOLGA PROJECT

The VOLGA project aims to develop a new path planning tool in the robotics software stack ROS as a component of the ROS-Industrial package suite. The tool will provide validated trajectories by using interval arithmetic through the IBEX open-source library.

## TECHNICAL AND ECONOMIC IMPACTS

Reliability of welding robot programming

## BUDGET

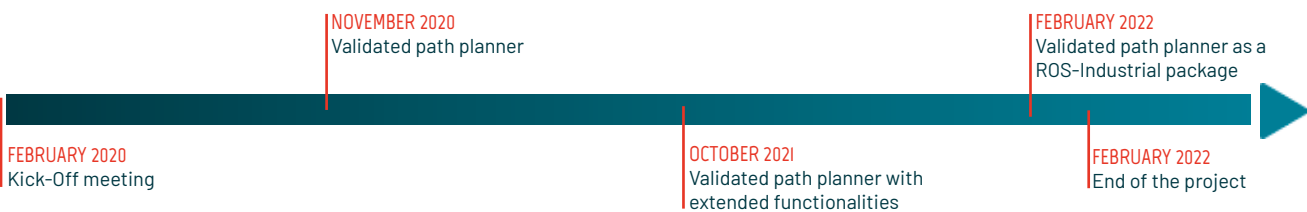
288 K€

## KEYWORDS

Path planning, ROS-Industrial, MoveIt!, Rapidly exploring trees, interval analysis, IBEX, manufacturing robots

## RESEARCH THEMES AND EXPERTISES

Adaptive and smart manufacturing systems  
Advanced robotics for industrial processes



## INDUSTRIAL CONTEXT

The path planning algorithm designed in this FTP is adapted for traditional path planning applications. However, it is particularly targeted to industries that are required to guarantee that a path planning can be executed without any issue. Examples of which are nuclear and medical applications as well as continuous processes in which an unexpected impossibility to continue results in the full loss of the product being produced e.g. additive manufacturing, welding or laser cutting. The proposed use-case is representative of these constraints as within its context, any interruption during the welding operation introduces defaults on the parts.

## INNOVATIVE FEATURES

- Path planning is ubiquitous in robotics, and the problem will be addressed here in a generic way. This component can thus be of interest to the whole robotics community.
- Resorting to a reliable planner increases safety as a proof of non-collision. The component can bring a key difference in terms of industrial-level robustness.

## INDUSTRIAL APPLICATIONS

The outcome of the project will be made known to the robotics community through tutorials, demonstrations and publications. Specifically focused communication activities are planned on WP4 to raise awareness on the advantages of the tool for these stakeholders.

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