

## High precision positioning at large facilities,

### in a collaboration with project B.O.R.I.S.[1]

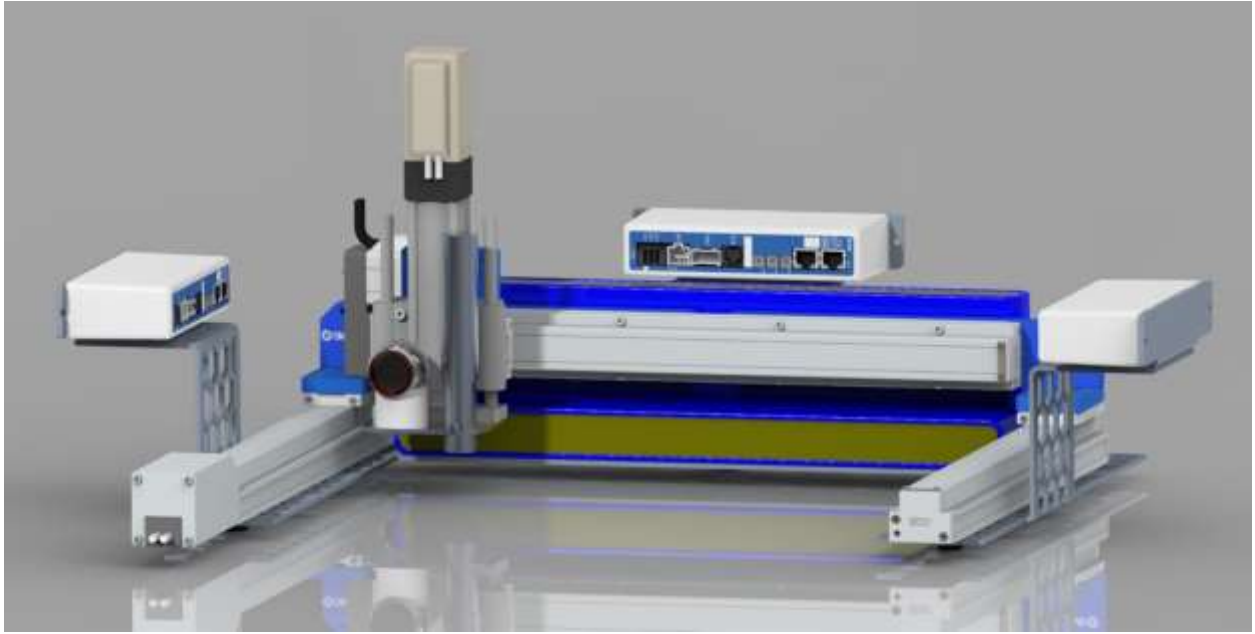
Alina Andersson, research engineer at MaxIV

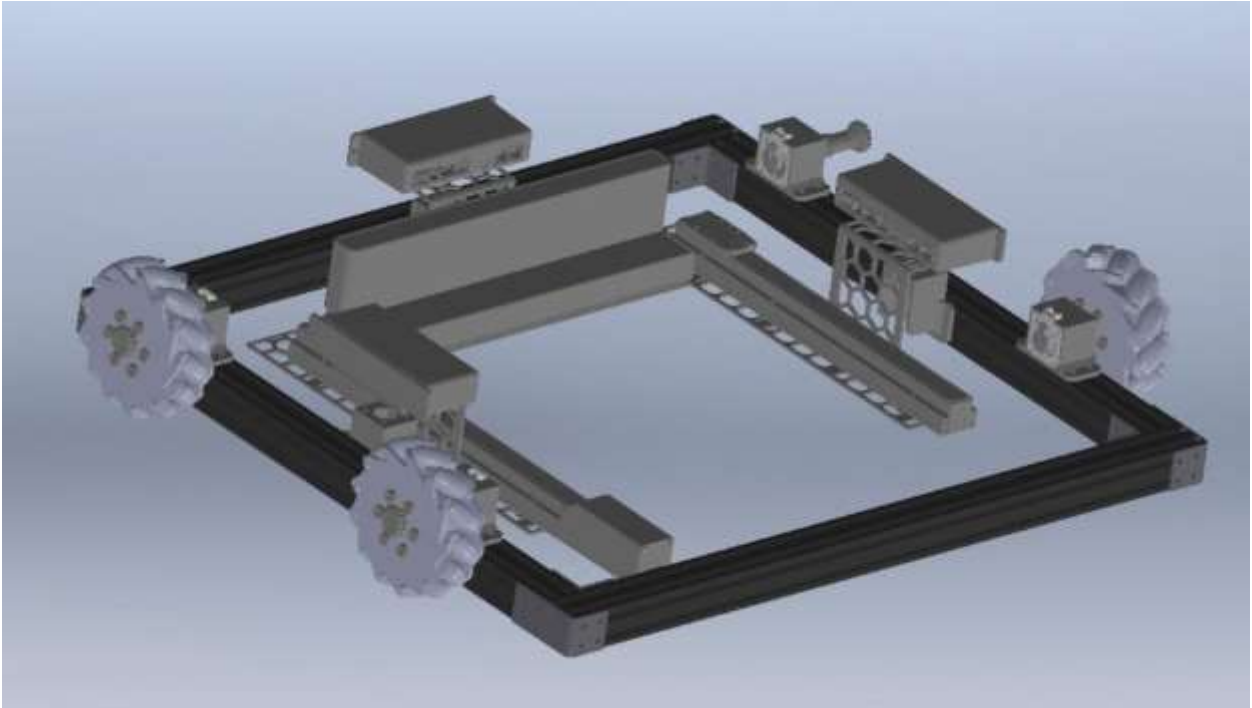
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[1] B.O.R.I.S - Bluelining Optimal Robotic Imprinting System. (Bluelining is a technique of transferring a three-dimensional computer model into real space to make marks for equipment installation on the floor)

Large-scale infrastructures, such as MAX IV Laboratory, depend on equipment that is required to perform highly precise work. Such performance is strongly affected by the components' position in space. The goal of this project is to develop an advanced robot that will bring the precision of equipment positioning to a level far beyond the one attainable by current methods. MAX IV and its collaborators and users from academia and industry will greatly benefit from the project outcome. Furthermore, the robot could be used in other similar environments and has a potential for application in industrial setups.

High precision positioning at MaxIV is provided by a laser tracker, the main connection between network (coordinates of reference points inside the facility) in 3D CAD model and reality.



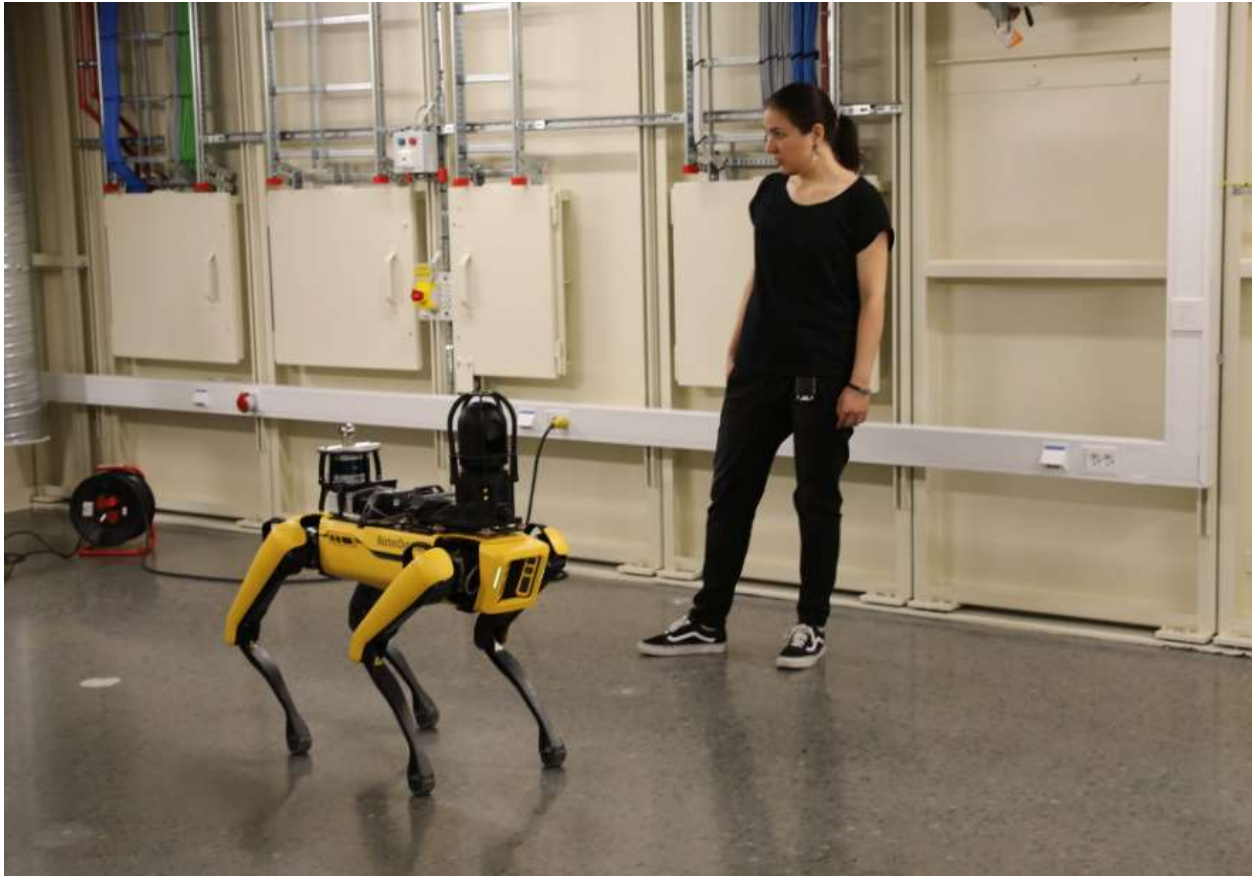


Right now the robot is heavily involved in the following courses and activities:

- EIEN45, Applied Mechatronics. The Department of Industrial Electrical Engineering and Automation (IEA)
- EIEN01, Mechatronics, Industrial Product Design. IEA
- FRTF20, Applied Robotics and some short project courses. The Department of Automatic Control (AC)
- FRTN70, Project in Systems, Control and Learning, AC
- IYT000, Engineering Training Course - The work experience at MaxIV. AC
- The Master Thesis “Mobile Floor-Marking Robot, utilizing Feedback from Laser Tracker” by Lisa Klinghav (The Department of Automatic Control, TFRT-6123) 2020/2021
- The Master Thesis “High Precision Robotic Manipulator for Blue-Lining at MAXIV” by Vinay Venkanagoud Patil 2022
- The cooperation with LTH can be extended to other related courses too. You are welcome to join!

The project for the development of the currently existing preliminary prototype has been led at MaxIV Laboratory by Alina Andersson (research engineer in SAM-team, Engineering I). The department of Automatic Control, LTH, Lund University and the Department of Industrial Electrical Engineering and Automation, LTH, Lund University will be involved in the further developments described in this application.

The project has a collaboration and knowledge sharing with the SBUF development project by Peab, Cognibotics AB and LTH (Buster - construction robot dog based on Spot from Boston Dynamics).



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