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Back to school: robots learn from factory workers

A Czech startup is making factory automation easier by letting workers teach robots new tasks through simple demonstrations instead of complex coding.

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What if training a robot to handle dirty, dangerous work on the factory floor was as simple as showing it how? Czech startup RoboTwin is doing exactly that, helping factory workers teach robots new skills by demonstration.

Instead of writing complex code, workers perform the job once and RoboTwin's technology turns those movements into a robot programme – opening the door to automation for smaller manufacturers.

Founded in Prague in 2021, RoboTwin builds handheld devices and no-code software that capture human movements and translate them into instructions for industrial robots. The aim is to make automation faster, simpler and more accessible to manufacturers that do not have specialist robotics programmers.

"The robot basically copies the human demonstration," said Megi Mejdrechová, RoboTwin's co-founder and chief technology officer. "People with no coding skills can transfer their know-how and experience to robots."

Mejdrechová, a mechanical engineer trained at the Czech Technical University in Prague, developed the core technology behind RoboTwin during her work in robotics research and industry. Her experience in robot control using AI and computer vision inspired her to create something practical for European manufacturers.

"Czech engineering is quite traditional and focused on scientific papers," said Mejdrechová. "Visits to Singapore and Canada and other work experiences led me to focus on making a product that people could use."

Getting started

In 2021, Mejdrechová entered a jump-starter programme and won first prize in the manufacturing category. "We saw then that there was potential for the technology," she said.

This encouraged her to start RoboTwin with colleagues Ladislav Dvořák and David Polák, who shared her enthusiasm for human-robot partnerships. Mejdrechová received backing from Women TechEU, an EU scheme supporting women founders of deep-tech startups.

The RoboTwin team shared their results on the Horizon Results Platform, an online showcase for EU-funded innovations, which led to an invitation to the EU's Empowering Start-ups and SMEs initiative.

This helped fund their trip to Hannover Messe 2025, a major global manufacturing trade fair, and opened doors to new business contacts and deals.

Through a mix of public and private investment, RoboTwin has secured funding to refine its technology and expand to manufacturers in Central Europe, the Netherlands, Mexico and Canada.

In 2025, Mejdrechová was named in Forbes Czechia's 30 Under 30list for her work in making the training of robots accessible to more manufacturers.

Schooling robots

At the heart of RoboTwin's system is a handheld device equipped with sensors. When a worker performs a task, for example spray painting a metal component, the system records the movement and converts it into a robot programme that can be reused in production.

Instead of requiring a specialist engineer to manually code every movement, the system captures the worker's natural technique and translates it into precise instructions a robot can follow.

"We started with jobs that are ugly, dirty and unhealthy for workers to do manually," said Mejdrechová.

Thanks to the no-coding system, the process can be completed in a few steps and typically takes about a minute. For factories producing small batches or frequently changing products, this speed can make automation far more practical than traditional robot programming.

Making automation easy for all

Robotics in manufacturing is not new. The automotive industry already leads the way with about 23 000 new robots added to production lines in 2024. But while large companies can invest heavily, automation remains challenging and expensive for many SMEs.

This is where RoboTwin lends a hand. It has assisted firms in the surface-treatment industry – companies that powder coat, paint or polish metal or plastic parts for car factories.

"Even if the batch of products you are producing is small, with our approach you can create a robot programme fast and easily," said Mejdrechová.

For example, RoboTwin has assisted RobPainting, a Dutch company that robotises painting for SMEs to improve quality, reduce costs and minimise rework.

"With our device we can teach the robot precise trajectories that are needed for a product and about its surroundings," said David Vobr, a robotics specialist at RoboTwin who often assists customers.

Dangerous jobs

RoboTwin's system can work with a wide range of industrial robots, including collaborative robots designed to operate safely alongside humans.

"We can have manipulators or painting robots and also collaborative robots, which can work alongside humans because they have sensors that tell them when to stop moving if someone could get hurt," said Vobr.

RoboTwin initially focused on surface treatment in manufacturing, where tasks such as spray painting require workers to wear protective clothing and perform repetitive movements.

"These jobs are difficult to automate because there is often a lot of hidden movement involved," said Mejdrechová, referring to small adjustments and gestures that workers make instinctively.

The sector also faces labour shortages.

"People are often not happy doing these things and there is a lack of workers willing to take these jobs. So there is a high demand for automation."

Customers report that many robot programmes can now be created without shutting down a production line.

RoboTwin has already worked with a number of companies, including Surfin Technology, a Czech company specialising in robotic coating solutions, and Innovative Finishing Solutions in Canada, which brings its technology to North American customers.

Scaling up

EU support for RoboTwin is ongoing. A €2.3 million grant from the European Innovation Council secured in 2025 will help accelerate product development and market expansion.

The funding will support the next generation of RoboTwin's technology. Instead of relying solely on manual demonstrations, the system will increasingly use stored experience and data to generate robot programmes automatically based on the shape of an object.

The company says this could make automation viable for many manufacturing tasks that were previously too complex or costly to automate.

For Europe, technologies like RoboTwin could play an important role in strengthening digital sovereignty and smart industrial innovation. They can help smaller manufacturers adopt advanced robotics without needing specialised programming expertise.

As factories become more flexible and data-driven, the ability to quickly teach robots new tasks may prove increasingly valuable.

Mejdrechová believes this shift will help bring automation within reach of a much wider range of companies.

"Our goal is to make robot training something that workers can do themselves," she said. "If we succeed, automation will no longer be limited to large factories with specialised engineers. It will become a tool that any manufacturer can use."

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- RoboTwin (CORDIS)
- Robotwin project website
- A new plan for Europe's prosperity and competitiveness

- Women TechEU
- EIT Manufacturing
- EIC Accelerator
- EU Startup and Scaleup Strategy
- Horizon Results Platform