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Teleporting Human Experience Into Automated Operations

Bringing videoconferencing into the human dimension improves productivity and collaboration.

Built and tested by Milford, NH-based Cirtronics (below), Ava robots provide interactive experiences between the conference room and production floor.

WHEN MOST PEOPLE think of robotics in manufacturing, they envision robotic arms, precisely, endlessly, and repeatedly placing parts with zero fatigue and only minimal downtime. Robots remove the possibility of human variability, and provide a sense of futuristic efficiency and what can feel like an almost sterile lack of human presence. In some cases, however, that missing human presence can be problematic.

Consider the fact that innovation and creativity are inherent in being human and interacting, not just with other human beings, but also with technologies and improvements. Streamlining, troubleshooting, and brainstorming, for example, are all necessarily human activities. That said, what if the best of robotics could be combined with true human interaction? What if real human beings, along with their intelligence, creativity, and insight, could be brought to where they are needed in manufacturing operations? Marcio Macedo, vice president and co-founder of Ava Robotics, Cambridge, MA (avarobotics.com), suggests that's where autonomous video-collaboration robots can help.

Macedo points to his company's video-collaboration robot as a technology that offers the freedom of practical teleportation for human workforces. Combining cutting-edge robotic technology with the benefits of human presence, Ava robots are the size of a small adult. Their mobility means they can navigate through space autonomously, and their two-way video and audio capabilities create face-to-face interactive experiences that naturally move between the conference room and the production floor. The company's journey in bringing its robots to market is a case in point.

COLLABORATION

To build and test its robots, Ava chose to work with employee-owned contract manufacturer Cirtronics, Milford, NH, (cirtronics.com). Using a process called "co-building," engineers from both teams came together to create, identify, and deploy best practices. To verify design and production success, they also worked together to create complex test tracks that mimicked real-world applications inside the Cirtronics manufacturing facility, including obstacles and changes in floor texture. This early collaboration resulted in more efficient manufacturing, testing, and iterative updates as the design evolved.

Dennis Forward, senior engineer at Ava Robotics, recalled the use of his company's robots in the early stages of production at Cirtronics. "During our co-build period," he said, "we had Avas at Cirtronics and at our office in Cambridge. If Cirtronics' manufacturing team had questions, we teleported our engineers into our robot at the factory and then autonomously traveled to our build-location on the manufacturing floor. Doing so, we could immediately talk with the assemblers and engineers, and view the exact parts and assemblies that were being discussed. This was so much more efficient than talking on the phone or sending pictures back and forth."

ENABLING DYNAMIC PERSONAL PRESENCE FOR REMOTE WORKERS

Ava Video Collaboration (avarobotics.com) facilitates natural communication by offering freedom of movement and two-way video and audio capabilities. According to the company, users can immediately establish a secure connection and, unlike standard video conferencing, experience 'being' anywhere in the world. Features and applications include:

- The video-conferencing capability incorporates a combination of high-definition video and audio, end-to-end security for the enterprise, and integrated Cisco WebEx video applications.
- Users can look around, move, and "sit" or "stand," even in remote locations.
- The robots map the environment and use AI (artificial intelligence) to safely navigate. There is no need for the user to drive the robot or to understand the remote location's layout. When users are done teleporting, Ava returns to its charging station.
- Perform scheduling and control with the Ava Robotics App (Apple iOS and web browsers).

INTO THE BEYOND

It's not difficult to see the potential Ava's robots have to change fast-paced engineering and manufacturing environments. Imagine an engineer who needs to collaborate with a production team, a mentor who wants to check on a new employee, a technician who needs to address a production-line problem, or a customer wanting to visit the manufacturing plant. It would be ideal to have a person moving freely around the manufacturing floor and interacting directly with the people that are involved, but is not always possible or practical. **EP**

Based in Cambridge, MA, Ava Robotics is expanding human potential by combining autonomous robotic mobility with high-definition video conferencing. Leveraging technical heritage from iRobot, the company's engineers are developing products that enable workers to interact and collaborate, while easily and safely moving through remote locations as if they are physically present in the space. Learn more at avarobotics.com.

Cirtronics, Milford, NH, is a contract manufacturer for high-tech companies in the greater Boston area. The ITAR, FDA-registered, woman-owned, small business tailors its services to fit the needs of each customer. Learn more at cirtronics.com.