

# Robots: a threat to jobs or just a work tool?

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Increasingly sophisticated and autonomous, robots are steadily infiltrating factories, firms and hospitals. And it is undeniable that the deployment of robots is having an impact on the jobs of their human workmates.

Interview, on the sidelines of a [L'Atelier numérique \(L'Atelier Digital\) broadcast](#), with David Lemaitre, CEO of EOS Innovation, a firm which specialises in the design and manufacture of mobile surveillance robots; Raja Chatila, director of the Paris-based Institute for Intelligent Systems and Robotics (ISIR), a multidisciplinary research laboratory that brings together researchers and academics from various fields of Engineering, Information Science and the Life Sciences; and Bertin Nahum, founder and CEO of Medtech, which specialises in designing and selling mobile robot assistants for operating theatres.

**L'Atelier : Current technological advances are now pushing robot use way beyond factories and production lines. Are robots becoming indispensable in our society?**

**Raja Chatila:** Well, robots are indeed coming to the fore in a number of areas of the working world and also daily life, a bit like the personal computer in the early 1980s, a trend which then grew in the 1990s and beyond. Why? Because on the one hand advances in technology and science have led to a stream of considerable progress in recent years. The rising calculation speed of computer processors, which are of course the core of these devices, has enabled us to develop systems that are fast enough to produce real-time results. Nor should we forget low-cost miniaturisation of sensors. These are now used everywhere – in mobile phones, cameras, etc. These various factors have enabled the further development of robotic systems which, to varying degrees, combine perception, decision-making and action. These systems are now seeing near-exponential growth in many fields.

**L'Atelier : Among the fields of application for robots are healthcare and surveillance. EOS Innovation's mobile surveillance robots are designed to work in warehouses. How do they work, David? Will they replace security guards?**

**David Lemaitre:** Our robots are designed to do the rounds inside warehouses, in order to detect and check out any signs of intrusion or other problems – if a product is in the wrong place, for example. In the longer term, these robots will be able detect a hot area in a warehouse, indicating the presence of a human being, and raise the alarm. When a robot detects something, it sends the information to a guard who picks up on it. So what we're talking about here is teamwork: security guard plus robot.

**L'Atelier : So the security agent is not in the same location as the robot...**

**David Lemaitre:** Well, the agent might be somewhere on the site, but not in the actual warehouse. The guard could on the other hand be located at the other end of the country, working via remote surveillance. S/he will pick up the information sent by the robot – the video filmed by the robot, the position of the robot in the warehouse and the exact location of the problem. Using this data, the guard will decide whether or not to order the robot into action. The robot acts only on the basis of the guard's decision. That's why I described this as security guard-plus-robot teamwork.

**L'Atelier: But in fact the security guard only intervenes once the robot has done the initial work. So if there's no guard on site, does that mean a number of tasks are no longer being carried out?**

**David Lemaitre:** The jobs that a guard would no longer be doing are boring, repetitive and often dangerous as well. When intruders break into a warehouse, it's preferable to have the robot confront them rather than a security guard, who is quite likely to be roughed up or even worse. The guards are well aware of the valuable role played by robots in their work. They see this new practice as genuine progress which adds extra professionalism to their job as a surveillance officer.

**L'Atelier: There's some similarity here with Bertin Nahum's Rosa robots. Bertin, you describe them as robot assistants for the operating theatre. Does the word 'assistant' mean that the robot takes over some tasks from the surgeon rather than replacing him/her?**

**Bertin Nahum:** We use the word 'assistant' basically because we want the idea of a robot worker to be accepted as an everyday thing. Basically they are just smart tools which can add extra precision during complex operations on the brain and the spinal column.

**L'Atelier: How exactly does this work in practice? Is the robot a sort of CoBot, a tool that assists the surgeon?**

**Bertin Nahum:** We're talking about robots that can provide extra precision during what are known as 'less invasive' operations. It's a sort of GPS which guides the surgeon's hand in positioning the instruments when performing cranial neurosurgery or surgery on the spinal column through a relatively small opening. Operating through the smallest possible incision means less bleeding and less post-operative pain.

**L'Atelier: Raja, how do you feel about these two innovations?**

**Raja Chatila:** Well, both of them illustrate how robotics can assist work, rather than how it can displace people. The robot is an extension, a tool. As regards the security guard robot, it means that the guards can focus on their real job, what they're really needed for. Why do we call it a 'robot'? Because it has the capacity for perception but has built-in controls to guide it. It can't do the job all by itself, it requires the involvement of a person.

**L'Atelier: So all three of you are basically in agreement that in these cases robots are a work tool; they are not threatening people's jobs. However, they still have an impact on jobs in the sense that people have to learn to work with these robots. That means training, new skills. What's happening here in your specific fields?**

**David Lemaitre:** Security guards see the use of robots as making their jobs more professional. It means they can say to themselves: "We aren't just there to make our rounds for hours on end without adding any real value." Now they can really see how they add value. Training on our products is very straightforward and takes very little time, because we've developed a simplified robot management interface that enables us to move quickly. Because in the field of security you do have to move quickly.

**Bertin Nahum:** The advent of robotics in the medical and surgical fields cannot be compared in any way with what robotics has contributed to industry. In surgery, robotics is in no way intended to make productivity gains at the expense of manpower. As I've said already, our robots don't replace anyone. They're there only to help the surgical operation in terms of precision, greater reliability, to make everything precisely replicable. Which of course significantly increases the quality of the operation.

**L'Atelier: When you design your robots, do you set a limit on the range of potential tasks it might perform?**

**Bertin Nahum:** This is a key aspect of the usage of our machines, which are in no way autonomous. As I said earlier, our robots act as a sort of GPS for the surgeon. And no-one would ever suggest that the GPS can replace the driver. A GPS never replaces the intelligence, control and thought processes of the operating theatre – which means the surgeon.

**David Lemaitre:** I agree. The robot helps with decision-making, but in our case the final decision is taken by the security agent who's watching the screen. S/he's the one who decides that the robot should intervene by sounding the alarm, employing dissuasive tactics, and so on.

**L'Atelier: So we can really see the difference here between an industrial environment and a service environment, where it's more obvious that the robot has a complementary function. But might we foresee that a time might come when – like the telephone – we cannot do without robots... to the point where they become our doubles?**

**Raja Chatila:** Perhaps not a double as such, but rather an extension of ourselves. Experience shows that when that sort of new machine – whether it's a computer connected to the Internet or a mobile phone – starts to emerge, uses will be found for them that were never thought of at first. And that's an ongoing process. New uses develop and then eventually the tool becomes indispensable. Having said that, we shouldn't have any illusions. Robotics will definitely transform some jobs. Robotics transforms techniques. So some jobs will in fact become obsolete and just disappear. This is also a fact of history. Agricultural mechanisation means that today the farmer doesn't have to walk behind his plough. Instead he sits on his tractor and can do many more things. Of course we can always say that some skills have disappeared and jobs have been destroyed. But at the same time this creates many more jobs and jobs that are far more interesting too.

*See the portrait of David Heriban, an innovator who is working on micromanipulation for the industry of the future*