

# Robots in the Working World

## Introduction

It is reasonable to worry that robots in the working place might produce a negative effect by taking jobs from workers. However, it has been found that robots create more and better-paying jobs than they replace. Robotics can also help industries fill the needs of their customers by providing faster and more accurate labor. Robotics can also generate savings in energy and decrease waste of resources. Therefore, robots in the working place produce a net benefit for society.

### Packaging



Figure 1. Robots packaging sausages. Reprinted from "Clever handling: Alyson Magee examines how robotics can enable meat firms to achieve greater efficiency and sustainability across their businesses," by A. Magee, 2015, Meat Trades Journal, p. 18.

Robots pack thousands of cans of meat product per hour (Magee, 2015).

### Healthcare



Figure 2. Members of the US Air Force posing for the Defense Robotic Surgical Education program next to a surgical robot. Reprinted from *Military Simulation & Training Magazine*, 2019, Retrieved from <https://militarysimulation.training/technology/robotic-surgery-milestone/>.

Army surgeons get trained to perform surgery with robotic assistance (US Air Force, 2019).

### Manufacturing



Figure 3. Robotic arms in a factory. Reprinted from *Unsplash*, by D. Levêque, 2019, Retrieved from <https://unsplash.com/photos/GpNOhig3LSU>.

Robotics arm accelerate assembly and disassembly lines (Calderone, 2016).

### Construction



Figure 4. Asbestos removal machine. Reprinted from "A framework of indicators for assessing construction automation and robotics in the sustainability context," by Takenaka Corporation, 2018, *Journal of Cleaner Production*, 182, p. 3.

Robots remove toxic materials to protect construction workers (Pan, W., Pan, M., Linner, Cheng & Bock 2018).

### Welding



Figure 5. Welding robot. Reprinted from *Robotics Online Blog*, by Robots Online Marketing Team, 2017, Retrieved from <https://www.robotics.org/blog-article.cfm/Robotic-Welding-Improving-the-Performance-of-Your-Automated-Welding-Processes/61>.

Robots make welding inexpensive and safe (Pan, M., Pan, W., Linner, Cheg & Bock, 2019; Ogbemhe, Mpofu & Tlale, 2017)

## Benefits

- Produces higher yield, lower costs, and less waste (Magee, 2015; Ogbemhe et al., 2017).
- Energy savings in heating during winter and lighting at night (Ogbemhe et al., 2017).
- Generates well paying jobs directly and indirectly (Dieppe, 2014).
- The World Economic Forum predicts that robots will replace 75 million jobs while creating 133 million jobs between 2018 and 2022 (Ogbemhe et al., 2017).
- Use of industrial robots is inversely related to unemployment (Dieppe, 2014; International Federation of Robotics, 2018) as shown in figure 6.

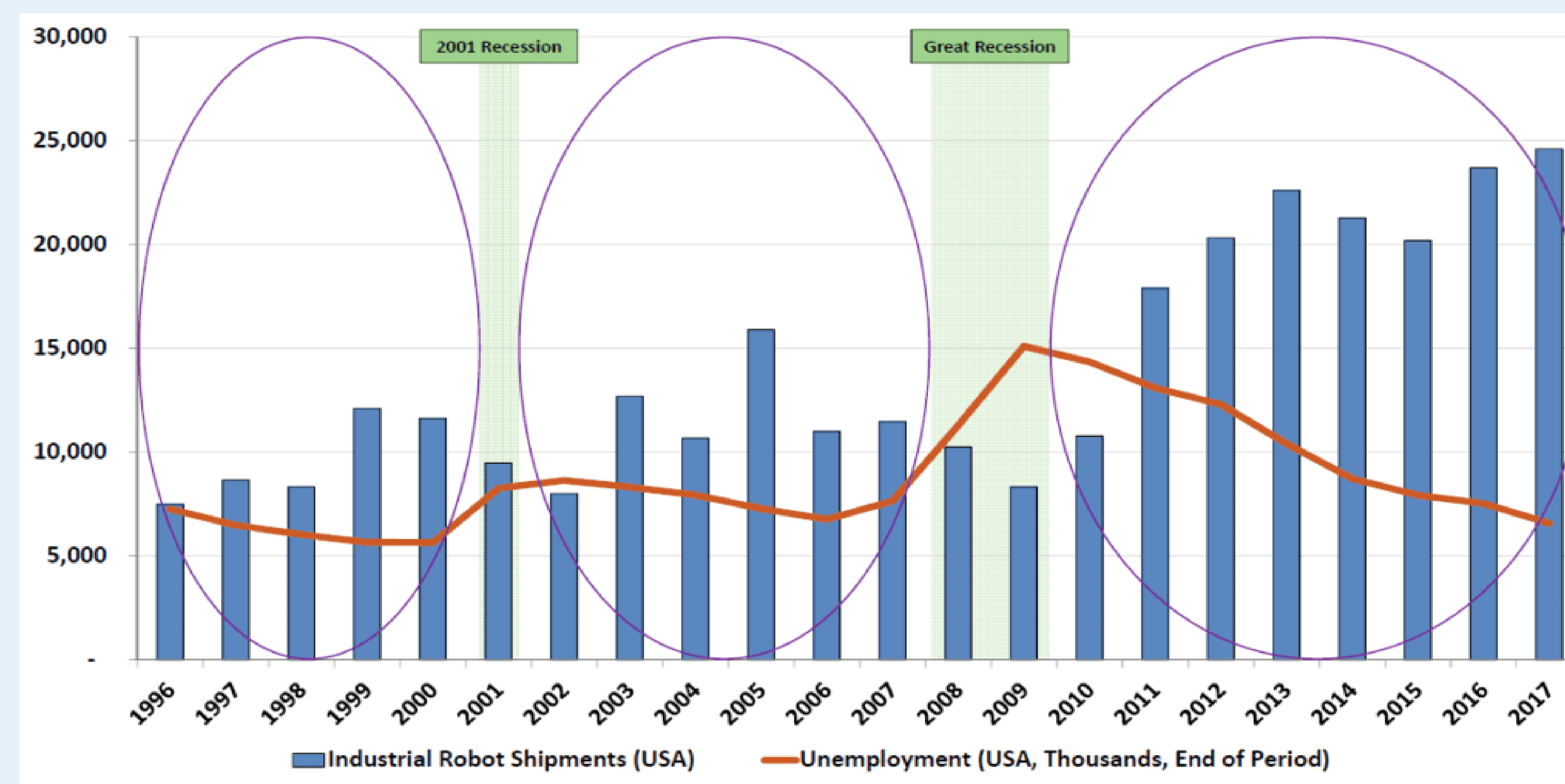


Figure 6. Industrial Robot Shipments vs. Unemployment Level in the U.S. Adapted from *Association for Advancing Automation*, 2018, Retrieved from <https://www.a3automate.org/first-world-problems-and-the-role-of-automation/>.

## Challenges

- Low-income workers with lack of access to education need to be trained to operate robots to avoid possible income inequality (Clemens, 2016).
- It is necessary to educate more people to design robots (International Federation of Robotics, 2018).
- Robots pay off for themselves in about two years, but the initial investment can be high for a new employer (Bugmann, Siegel & Burcin, 2011).

## Conclusion

There are benefits but there are also a few challenges to robotics in the working world. Most of the challenges can be solved through education. Robotics can help many industries become more sustainable by increasing the safety of their workforce, improving quality, increasing output, retrieving more revenue, saving energy, and reducing waste.

## References

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