



# hanetf

## **The Warriors of the Fourth Industrial Revolution**

Robotics and Artificial Intelligence

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2020

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## Overview

The fourth industrial revolution is the current environment where disruptive technology trends such as the Internet of Things (IoT), Robotics, Artificial intelligence (AI), Future Cars/Autonomous Vehicles, Blockchain, Cloud Computing, Genomics and Social Media are changing the way we live and work.

Unlike previous industrial revolutions, these technologies are rapidly combining to create an accelerating, virtuous cycle of nearly unlimited disruption. While previous industrial revolutions were often localized, today is interconnected and global and its impact is already visible in homes and businesses across the world.

This is a short guide to help investors understand the main sectors of the fourth industrial revolution and their features, applications, and growth potential:

### Robotics & Automation

Future Transport

Cloud Computing

Cyber Security

Genomics

Social Media

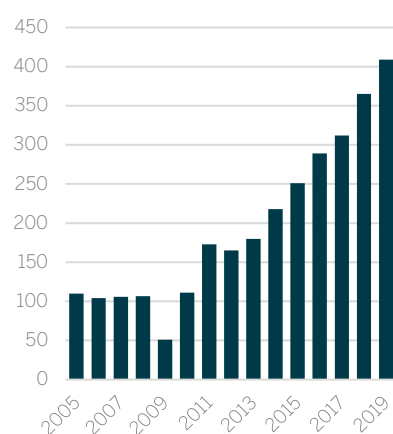
Blockchain

Augmented & Virtual Reality

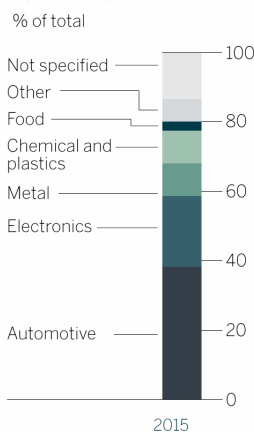
## Robotics and Automation (Artificial Intelligence)

Robotics is a term for a mechanical device designed to perform an operation or task. These engineering feats are increasingly joined by advancements in software, which allow computers to work, learn, and problem-solve - an area of computer science called artificial intelligence. Together, these technologies are revolutionising the way we complete tasks, analyse data, and make decisions.

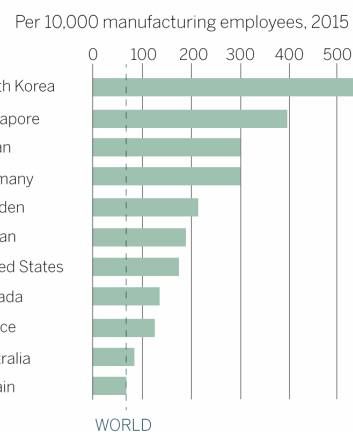
Robotic Sales  
'000 units



By industry



Number of robots



*For illustrative purposes only*  
Source: International Federation of Robotics



Recent technological advancements in robotics and artificial intelligence (AI) are disrupting a range of industries from manufacturing, to health care, defence, and transportation.

Robots are fast replacing human workers in a variety of industries and are offering companies massive efficiencies, increased output, 24/7 operations, predictable quality of goods and (in a post-COVID world) less human-to-human interaction when producing goods.

Militaries and emergency services are also likely to be significant players in the robotics and automation industries as drones, exoskeletons and other technologies are increasingly used to replace or augment human troops and emergency workers in dangerous situations.

Few realise just how little human oversight is required of today's most advanced robots. One Japanese factory has been running in "lights out" mode for more than 15 years, meaning there are no human factory workers.<sup>1</sup>

Automated plants like this are capable of manufacturing everything from electric razors to even other robots. In addition, breakthroughs in AI allow computers to perform complex tasks by drawing on various data sets and inputs. For example, IBM's Watson computer is now able to generate sports highlight reels by analysing crowd noises and player gestures. Combining the mechanical abilities of robotics with the intelligence of AI has resulted in machines capable of cleaning, cooking, driving, and caretaking among other human-like tasks.

Once unleashed, this technology is impossible to put back in the box and robot/AI combinations are posed to replace many repetitive, dangerous and menial tasks in industry and our day to day lives.

## Robotic Solutions to Human Problems

Robotics and AI are of such interest as they help address a host of problems resulting from an aging population, rising labour costs, and quality improvement needs.

**Aging Populations** – Fewer people to produce goods & services, more economic dependents, increased healthcare needs

**Labour Costs** - high labour costs can be reduced by robots (cheaper than offshoring). Wages in China and EM are getting more expensive.

**Performance Improvements** – robots more precise and faster than humans = less wastage, higher output and better quality.

Robots and AI are drivers of improved productivity. Engaging these technologies can yield faster, higher quality outputs without cognitive and physical problems. The adoption of robotics in places like Germany, South Korea, China, Japan, and the U.S. is expected to boost productivity by up to 30% by just 2025.<sup>2</sup>

Part of the reason for the sudden surge of robotics and automation in manufacturing lies in the skill gap. According to a survey conducted by Deloitte and the Manufacturing Institute,<sup>3</sup> up to 2 million manufacturing jobs will be left unfilled over the next decade due to improperly trained talent or a lack of individuals interested in careers in the manufacturing space.

Labour costs are expensive and rising, which is a particularly challenging prospect for competitive industries like manufacturing. While offshoring helps, many companies are finding robots to be even more

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<sup>1</sup> <https://www.globalxetfs.com/assessing-the-potential-of-robotics-and-artificial->

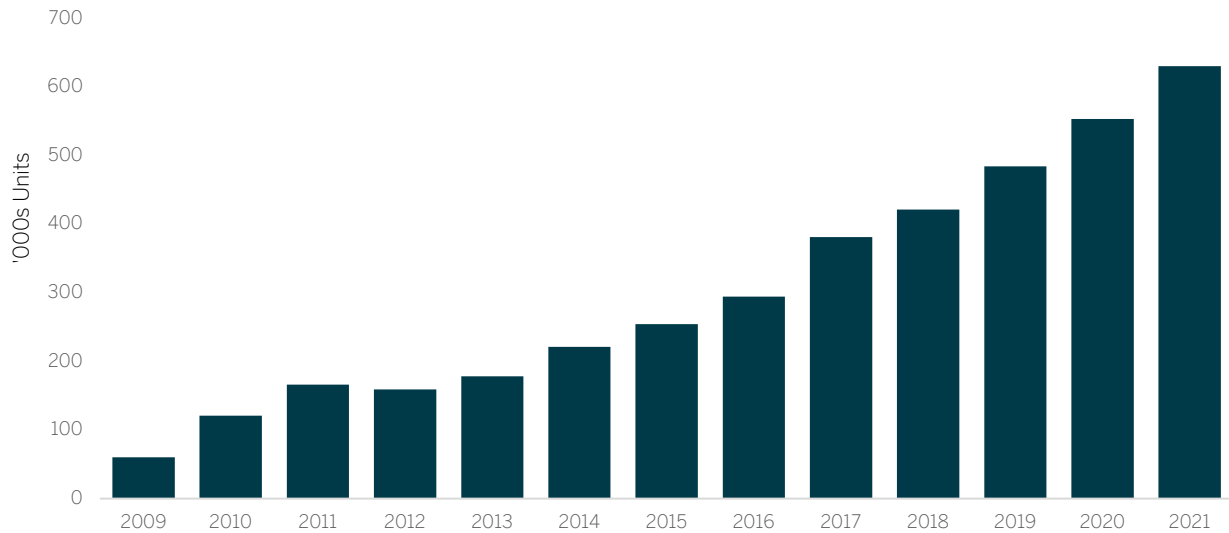
<sup>2</sup> <https://www.bcg.com/d/press/10feb2015-robotics-power-productivity-surge-manufacturing-838>

<sup>3</sup> [http://www.themanufacturinginstitute.org/-/media/E323C4D8F75A470E8C96D7A07F0A14FB/DI\\_2018\\_Deloitte\\_MFI\\_skills\\_gap\\_FoW\\_study.pdf](http://www.themanufacturinginstitute.org/-/media/E323C4D8F75A470E8C96D7A07F0A14FB/DI_2018_Deloitte_MFI_skills_gap_FoW_study.pdf)



cost efficient. One analysis found that offshoring jobs could save a firm approximately 65% on labour costs while replacing workers with robots can achieve an estimated 90 % in savings.<sup>4</sup>

### Industrial Robots - Estimated Worldwide Supply



*For illustrative purposes only*  
 Source: IFR World Robotics

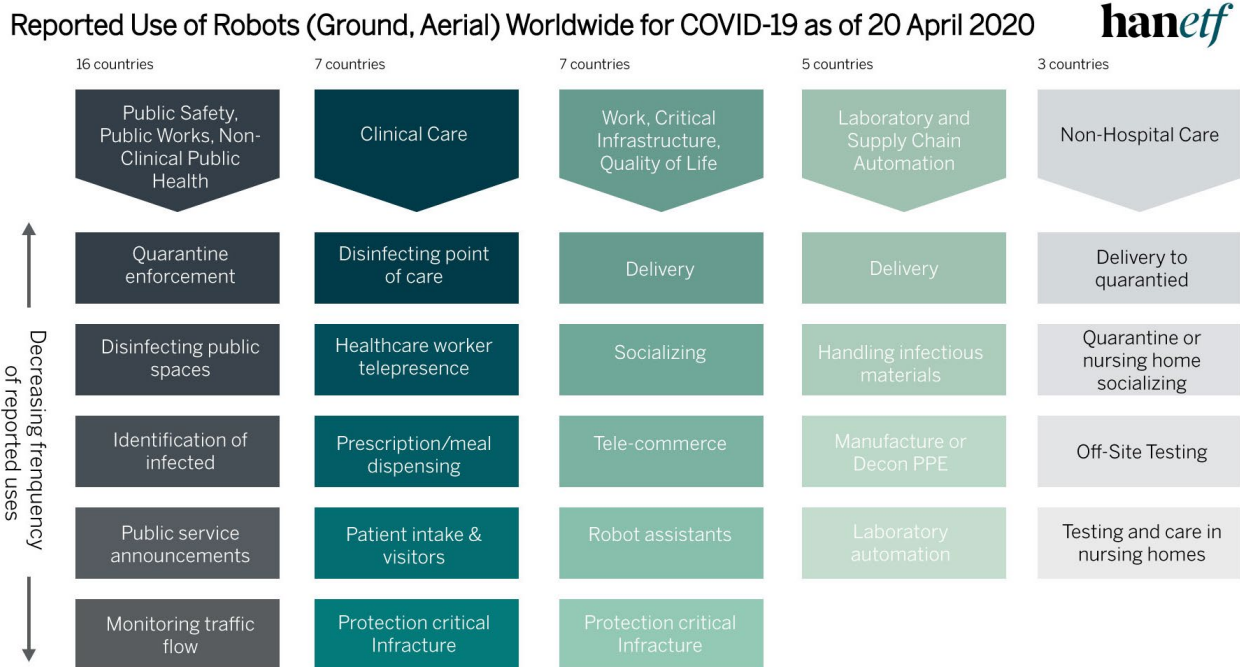
Production output is increasing dramatically as robots become cheaper to produce. The cost of industrial robotics is expected to drop to average levels of just \$20K per robot - converging with the cost of an average manufacturing worker. As the economic case for robotic workers becomes more attractive, the industry is expected to grow 10% p.a. hitting \$83bn in 2020.

In healthcare, robots are also revolutionising the speed, accuracy and efficiency of healthcare services. IBM Watson's supercomputer has 90% diagnostic accuracy already for lung cancer vs 50% physicians. In healthcare, robots are also revolutionising the speed, accuracy and efficiency of healthcare services. (IBM Watson's supercomputer has 90% diagnostic accuracy already for lung cancer vs 50% physicians. Over 5,000 Da Vinci surgical robots in hospitals around the world helped perform over 1 million operations (Intuitive Surgical corporate website press release 2018 4th qtr). With ageing populations, the demand for fast and accurate diagnosis, coupled with modern treatments for a variety of diseases and illnesses is likely to increase along with the demand for healthcare trackers, robotic nursing assistants, robotic surgeons and new medical devices.

<sup>4</sup> <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-21/artificial-intelligence-and-the-future-of-work.html>



The recent COVID-19 outbreak highlighted how robots can be used in situations that would be dangerous or inefficient for humans:



Source: R. Murphy, V. Gandudi, Texas A&M; J. Adams, Centre for Robot-Assisted Search and Rescue, CC BY-ND

## Artificial Intelligence

Artificial intelligence is already with us in the form of digital assistants (Hey, Siri...) and self-driving cars, but the power of computers to learn and problem-solve has applications for every industry. Analysts predicting that the robot and AI market will exceed \$150 billion this year (2020).<sup>5</sup>

The industries that are at the forefront of this adoption include:

**Manufacturing:** Factories will increasingly use industrial robots that are falling in price. Supply chains increasingly managed by smart order systems and inventory management.

**Military and Defence:** Drones, autonomous weapons, threat analysis, intelligence gathering

**Medicine:** Biotech and genomics, remote GPs, health trackers, AI diagnostics and custom medicines. For example, IBM's Watson supercomputer can diagnose lung cancer with a 90% accuracy rate compared to 50% by humans.

**Transportation:** Autonomous cars are already appearing on streets. By 2030 autonomous cars could account for up to 15% of passenger vehicles sold worldwide.<sup>6</sup>

<sup>5</sup> <https://www.ge.com/reports/every-business-piece-153b-artificial-intelligence-market/>

<sup>6</sup> <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry/de-de>





**Agriculture:** New ways to analyse soil, irrigation, and crop yields, robotic harvesting and smart greenhouses / barns

**Finance:** The financial sector is at the fore of advancements in AI as Financial Technology (FinTech) such as the introduction of robo-advisors which can create and maintain customised portfolios for investors.

We are only scratching the surface of what AI can deliver. Artificial intelligence could contribute an additional 1.2 percent to annual gross domestic product growth for at least the next decade - equivalent to \$13 trillion in additional global economic activity by 2030, <sup>7</sup>

## Investing in Robotics and AI

The significant growth potential, broad industrial applications and widespread consumer of AI and Robotics has spurred investor interest in this theme. Investors who see long-term opportunity in this theme can consider an allocation to the HAN-GINS Tech Megatrend Equal Weight UCITS ETF (ITEK). ITEK includes Robotics and AI as part of 8 transformational technology trends that are reshaping the world alongside Cloud Computing & Big Data, Cyber Security, Future Cars, Genomics, Social Media, Blockchain, Augmented & Virtual Reality.



<sup>7</sup> <https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai-on-the-world-economy>



## Fund Details

When you trade ETFs, your capital is at risk

EXCHANGE	BB CODE	RIC	ISIN	CURRENCY	INCOME
London Stock Exchange	ITEK LN	ITEK.L	IE00BDDRF700	USD	Acc
London Stock Exchange	ITEP LN	ITEP.L	IE00BDDRF700	GBP	Acc
Borsa Italiana	ITEK IM	ITEK.MI	IE00BDDRF700	EUR	Acc
XETRA	T3KE GY	T3KE.DE	DE000A2N5XE0	EUR	Acc
SIX	ITEK SW	ITEK.S	IE00BDDRF700	CHF	Acc

- [ITEK Factsheet](#)
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Name	TER	Bloomberg Codes				
		LSE \$	LSE £	Borsa €	XETRA €	SIX
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<b>HAN-GINS Tech Megatrend Equal Weight UCITS ETF</b>	0.59%	ITEK LN	ITEP LN	ITEK IM	T3KE GY	ITEK SW
<b>HAN-GINS Cloud Technology UCITS ETF</b>	0.59%	SKYY LN	SKYP LN	SKYY IM	5XYE GY	SKYY SW
<b>HAN-GINS Indxx Medical Innovation UCITS ETF</b>	0.59%	WELL LN	WELP LN	WELL IM	W311 GY	WELL SW
<b>KMEFIC FTSE Kuwait UCITS ETF</b>	0.80%	KUW8 LN	KUWP LN	KUW8 IM	KUW8 GY	-
<b>The Medical Cannabis &amp; Wellness UCITS ETF</b>	0.80%	CBDX LN	CBDP LN	-	CDSX GY	CBDX SW
<b>The Royal Mint Physical Gold ETC</b>	0.22%	RMAU LN	RMAP LN	-	RM8U GY	-
<b>BTCEC Bitcoin Exchange Traded Crypto*</b>	2.00%	-	-	-	BTCE GY	-

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