Future Technology That Will Change Our World

Source: Britannica Images

There are numerous top lists of emerging innovative technologies out there predicting the new frontiers of our fast advancing world. Among them **Artificial Intelligence**, **Automation**, **Blockchain**, **Gene Editing**, **Immersive Technology** and **Quantum Computing** are the highly shortlisted disruptive technologies that will transform manufacturing, finance, healthcare and almost all aspects of our lives in the near future.

This list contains over 30 resources mostly published within the past 3 years and aims to offer insights from various reliable sources, including consulting firms, news agencies, conference proceedings, journals, book titles, and more.

The Library will periodically add new resources to this list. Links to the full-text are indicated. If you encounter any problem in retrieving the materials, please contact library@sutd.edu.sg for assistance. Please also forward us titles that you would like to share with others in this list.

Topics

- **Artificial Intelligence**
- **Automation**
- **Blockchain**
- **Gene Editing**
- **Immersive Technology**
- **Quantum Computing**

Artificial Intelligence

Machines are getting smarter and smarter, artificial intelligence is swiftly changing our world, for better or for worse?

Alpaydin, E. (2016). *Machine learning : The new AI*. Cambridge, Massachusetts: MIT Press.
Available @ Main Library **General Lending** (Q325.5 ALP)

Butler, D. (2016, February 24). A world where everyone has a robot: Why 2040 could blow your mind. *Nature*. Retrieved 2018, January 16 from http://www.nature.com.library.sutd.edu.sg:2048/news/a-world-where-everyone-has-a-robot-why-2040-could-blow-your-mind-1.19431

IBM. (2016). IBM 5 in 5: With AI, our words will be a window into our mental health. *IBM*. Retrieved 2018, January 11 from http://research.ibm.com/5-in-5/mental-health/

McKinsey Global Institute. (2017, June). Artificial intelligence the next digital frontier? *Statista*. Retrieved 2018, January 16 from https://www-statista-com.library.sutd.edu.sg:2443/study/47827/artificial-intelligence-potential-report-2017/

Metz, C. (2017, May 11). Using AI to detect cancer, not just cats. *Wired*. Retrieved 2018, January 11 from https://www.wired.com/2017/05/using-ai-detect-cancer-not-just-cats/

Purdy, M., & Daugherty, P. (2016). Why artificial intelligence is the future of growth. *Accenture*. Retrieved 2018, January 18 from https://www.accenture.com/t20170927T080049Z__w__/us-en/_acnmedia/PDF-33/Accenture-Why-AI-is-the-Future-of-Growth.PDFla=en#zoom=50

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Automation

Making a system or equipment operate automatically to perform a function provides higher efficiency but also brings about concerns of jobs being lost, will this be the case?

Elliott, L. (2016, January 24). Fourth Industrial Revolution brings promise and peril for humanity. *The Guardian*. Retrieved 2018, January 11 from https://www.theguardian.com/business/economics-blog/2016/jan/24/4th-industrial-revolution-brings-promise-and-peril-for-humanity-technology-davos

Gramazio, F., Kohler, M., & Willmann, J. (2014). *The robotic touch : How robots change architecture*. Zurich : Park Books.
Available @ Main Library **General Lending** / **Term Loan** (TJ210.3 ROB)

Gray, R. (2017, May 23). How automation will affect you – the experts' view. *BBC*. Retrieved 2018, January 16 from http://www.bbc.com/future/story/20170522-how-automation-will-affect-you-the-experts-view

Kochan, T., & Dyer, L. (2017, September 4). How to keep robots from stealing our jobs. *Time*. Retrieved 2018, January 11 from http://time.com/4923566/robots-artificial-intelligence-jobs/

Tilley, J. (2017, September). Automation, robotics, and the factory of the future. *McKinsey & Company*. Retrieved 2018, January 18 from https://www.mckinsey.com/business-functions/operations/our-insights/automation-robotics-and-the-factory-of-the-future

Wollschlaeger, M., Sauter, T., & Jasperneite, J. (2017). The future of industrial communication: Automation networks in the era of the Internet of Things and Industry 4.0. *IEEE Industrial Electronics Magazine, 11*(1), 17 – 27. DOI: 10.1109/MIE.2017.2649104

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Blockchain

A powerful innovation in Fintech, blockchain technology secures data through cryptography, enabling the immutability of the data

McKinsey & Company. (2016, May). How blockchains could change the world. *McKinsey & Company*. Retrieved 2018, January 11 from https://www.mckinsey.com/industries/high-tech/our-insights/how-blockchains-could-change-the-world

Peck, M. E. (2017, September 28). Blockchains: How they work and why they'll change the world. *IEEE Spectrum*. Retrieved 2018, January 11 from https://spectrum.ieee.org/computing/networks/blockchains-how-they-work-and-why-theyll-change-the-world

Rivera, R., Robledo, J. G., Larios, V. M., & Avalos, J. M. (2017, September). How digital identity on blockchain can contribute in a smart city environment. In *Proceedings of 2017 International Smart Cities Conference*. IEEE. DOI: 10.1109/ISC2.2017.8090839

TechVision Group of Frost & Sullivan. (2017, June 29). Blockchain technology powering emerging applications. *Frost & Sullivan*. Retrieved 2018, January 16 from https://cds-frost-com.library.sutd.edu.sg:2443/p/54739/#!/ppt/c?id=D7B7-01-00-00-00&hq=blockchain

Ulieru, M. (2016, June 23). Blockchain enhances privacy, security and conveyance of data. *Scientific American*. Retrieved 2018, January 16 from https://www.scientificamerican.com/article/blockchain-enhances-privacy-security-and-conveyance-of-data/

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Gene Editing

It is now possible to alter an organism's DNA to treat and prevent genetic diseases, and create more possibilities

Broad Institute. (2017, October 25). Researchers extend power of gene editing by developing a new class of DNA base editors. *EurekAlert!*. Retrieved 2018, January 16 from https://www.eurekalert.org/pub_releases/2017-10/biom-rep102317.php

Fan, S. (2018, January 9). Gene therapy had a breakthrough 2017 - 2018 may be even better. *Singularity Hub*. Retrieved 2018, January 15 from https://singularityhub.com/2018/01/09/gene-therapy-had-a-breakthrough-2017-2018-may-be-even-better/#sm.000197rdzrdcgfggwxw1y4z6dbirj

Keeler, A. M., ElMallah, M. K., & Flotte, T. R. (2017). Gene therapy 2017: Progress and future directions. *Clinical and Translational Science, 10*(4), 242–248. DOI: 10.1111/cts.12466

Kolker, R. (2016). How gene editing technique will change the world. *Bloomberg*. Retrieved 2018, January 11 from https://www.bloomberg.com/features/2016-how-crispr-will-change-the-world/

Mullin, E. (2017). 10 breakthrough technologies: Gene therapy 2.0. *MIT Technology Review*. Retrieved 2018, January 11 from https://www.technologyreview.com/s/603498/10-breakthrough-technologies-2017-gene-therapy-20/

Reynolds, J. M. (2017, August 9). Gene editing might mean my brother would've never existed. *Time*. Retrieved 2018, January 11 from http://time.com/4892412/gene-editing-crispr-cas9-neurodiversity/

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Immersive Technology

Technologies like augmented reality and virtual reality let us embrace an era of mixed reality, where the real and virtual worlds merge seamlessly

Connected Studio. (2018). Future of content: Immersive experiences. *BBC*. Retrieved 2018, January 16 from http://www.bbc.co.uk/connectedstudio/projects/future-of-content-immersive-experiences

Cook, A. V., Jones, R., Raghavan, A., & Saif, I. (2017, December 5). Digital reality: The focus shifts from technology to opportunity. *Deloitte*. Retrieved 2018, January 16 from https://www2.deloitte.com/insights/us/en/focus/tech-trends/2018/immersive-technologies-digital-reality.html

Hall, S., & Takahashi, R. (2017, September 8). Augmented and virtual reality: The promise and peril of immersive technologies. *World Economic Forum*. Retrieved 2018, January 16 from https://www.weforum.org/agenda/2017/09/augmented-and-virtual-reality-will-change-how-we-create-and-consume-and-bring-new-risks/

Kongsilp, S., & Dailey, M. N. (2017, March). Communication portals: Immersive communication for everyday life. In *Proceedings of the 2017 20th Conference on Innovations in Clouds, Internet and Networks*. IEEE. DOI: 10.1109/ICIN.2017.7899416

Pettey, C. (2018, January 4). Immersive technologies are moving closer to the edge of artificial intelligence. *Gartner*. Retrieved 2018, January 11 from https://www.gartner.com/smarterwithgartner/immersive-technologies-are-moving-closer-to-the-edge-of-artificial-intelligence/

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Quantum Computing

Remarkably powerful machines might soon come into their own with new levels of data processing capabilities

Fursman, A., & Zaribafiyan, A. (2017). Innovating with quantum computing. *Accenture*. Retrieved 2018, January 16 from https://www.accenture.com/t00010101T000000__w__/br-pt/_acnmedia/PDF-45/Accenture-Innovating-Quantum-Computing-Novo.pdf

Juskalian, R. (2017). 10 breakthrough technologies: Practical quantum computers. *MIT Technology Review*. Retrieved 2018, January 11 from https://www.technologyreview.com/s/603495/10-breakthrough-technologies-2017-practical-quantum-computers/

Möller, M., & Vuik, C. (2017). On the impact of quantum computing technology on future developments in high-performance scientific computing. *Ethics and Information Technology, 19*(4), 253–269. DOI 10.1007/s10676-017-9438-0

O'Brien, J. (2017, March 24). The future is quantum: Solution to the world's critical problems. *Financial Times*. Retrieved 2018, January 16 from https://www.ft.com/content/6711e5c2-0e83-11e7-b030-768954394623

Popkin, G. (2017, September 13). Quantum computer simulates largest molecule yet, sparking hope of future drug discoveries. *Science*. Retrieved 2018, January 16 from http://www.sciencemag.org.library.sutd.edu.sg:2048/news/2017/09/quantum-computer-simulates-largest-molecule-yet-sparking-hope-future-drug-discoveries

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