

Artificial Intelligence (AI) is a hot topic today all over the world, with the pros and cons increasingly discussed, often confusing us with subjective views, groundless arguments, and misperceptions. One misperception is that the recent news of AI's victory over a human champion in a game of Go is a sign of the possibility of AI dominating human beings. But it was merely a match between a human champion and a team of computer engineers who created the AI's program, and thus a human-human battle. Another perception of AI is that it may take away working opportunities for humans by replacing their jobs, but this overlooks the new job opportunities that AI will create, such as more need for computer software and programming jobs, or job creation from possible economic expansion brought about by increased labor productivity through AI.

Our July/August 2016 issue highlights the potential of AI as a key to realizing a "knowledge-based society". Overall, we see AI as an opportunity for growth and prosperity and eventually the evolution of human civilization, and not as a risk to human beings. We believe that education could overcome concerns about a possible increase in income inequality between workers with computer knowledge and skills and non-skilled workers in a society where AI prevails.

Our cover story starts with the introduction of two international fora this year that highlighted the Fourth Industrial Revolution, a term describing the arrival of a digitalized economy with the emergence of AI: one was staged by the World Economic Forum and the other by the OECD. A global overview of how AI is leading technological innovation

is provided in an article by Klaus Schwab, founder of the World Economic Forum, and in an interview with OECD DSTI Director Andrew Wyckoff and his colleague, Alistair Nolan.

We also have interviews with two leading Japanese thinkers in the AI world — Prof. Hitoshi Matsubara and Dr. Kazuo Yano — whose arguments could be very useful in correcting some misperceptions of AI. We then switch to the views of a distinguished Japanese economist, Prof. Noriyuki Yanagawa, on the question of what AI will take away from human beings. His answer is, it is up to education. While AI is a self-learning machine, human beings in the new era will need to acquire new skills and knowledge by themselves to keep up with the speedy progress of the AI revolution.

New ventures also play a key role in creating a vibrant society, and the Fourth Industrial Revolution will be no exception. We introduce two young entrepreneurs, Kentaro Yoshifuj and Sakuya Morimoto, from whom we can learn about being both creative and courageous in starting new businesses related to AI and robots, key technology in our century. Not only new ventures but also large established companies, such as Toyota Motor Corporation, are also involved in the Fourth Industrial Revolution. In the last slot of our cover story, we have an article on the recent development of a driverless car written by three distinguished Toyota engineers.

Naoyuki Haraoka is executive managing director and editor-in-chief of Japan SPOTLIGHT

COVER STORY 1

The Fourth Industrial Revolution: What it Means, How to Respond 3

By Klaus Schwab

We need to shape a future that works for all of us by putting people first and empowering them in the era of the Fourth Industrial Revolution.

COVER STORY 2

Interview with Andrew Wyckoff and Alistair Nolan of the Organisation for Economic Cooperation and Development (OECD)

OECD — a Good Venue for Looking at the Big Picture of the 4th Industrial Revolution 6

By Japan SPOTLIGHT

While income inequality may widen due to the emergence of the digital economy, it should not be forgotten that digital technology will facilitate growth and equality.

COVER STORY 3

Interview with Hitoshi Matsubara, Professor of Future University Hakodate & President of the Japanese Society of Artificial Intelligence Artificial Intelligence (AI) on Verge of Making Dreams Come True 10

By Japan SPOTLIGHT

Human beings would be far more intelligent with computers, since they will be the main beneficiaries of its merits.

COVER STORY 4

Interview with Kazuo Yano, Corporate Officer & Corporate Chief Scientist, Hitachi Ltd. Research & Development Group Enhancing Human Capacities by Artificial Intelligence (AI) to Meet New Challenges in an Age of Uncertainty 14

By Japan SPOTLIGHT

AI would enhance not only labor productivity but also human happiness. This is the correct understanding of AI which would enable human beings to achieve evolution towards a "knowledge-oriented society".

COVER STORY 5

Will AI Take Away Jobs from Human Beings? 18

By Noriyuki Yanagawa

School education should be changed in the age of AI to boost our ability to solve social problems by utilizing AI ingeniously.

COVER STORY 6

Interview with Kentaro Yoshifuji, a 27 year-old entrepreneur, CEO of Ory Laboratory Inc.

Ory Laboratory — a Japanese Robot Venture to Combat Loneliness 20

By Japan SPOTLIGHT

OriHime created by Ory Laboratory, a robot for communication, is an example of how a robot can serve a humanitarian purpose rather than posing a threat to humanity.

COVER STORY 7

Interview with Sakuya Morimoto, COO of Exvixion Inc.

High-Tech Venture Begun in University Lab Enhances the Quality of Robots 24

By Japan SPOTLIGHT

High Speed Vision Technology to be applied to robots and driverless cars is a successful university-originated technology that has turned the Japanese venture Exvixion Inc. into a global one.

COVER STORY 8

Future Advanced Driving Support System with Automated Driving Technology 28

By Koji Taguchi, Ryuji Funayama & Toshiki Kindo

The development of automated driving technologies by Toyota Motor Corporation is described including the latest research for the future practical adoption of such technologies.