

第三次工业革命：机器人迅速崛起 (一)

Third Industrial Revolution: Rapid Rise of Robot (1)



文/季克荣 Text/Ji Kerong

我们正在经历人类历史上最神奇的两个事件：互联网与真正的智慧机器人。它们将从根本上改变全球经济格局和社会面貌。麻省理工学院（MIT）教授艾瑞克·布林约尔松（Erik Brynjolfsson）和安德鲁·迈克菲（Andrew McAfee）合著的《第二个机器时代》如是指出。第三次工业革命，机器人迅速崛起。

在《经济学人》（The Economist）的口中，第三次工业革命，机器人正在为我们的生活、职场，甚至是全球经济版图带来深刻变化。过去，我们都从电影与媒体中看到机器人的样貌，如今，机器人即将来到我们身边。

机器人大潮汹涌而来

根据麦肯锡全球研究院（MGI）的调查，2008年因为金融海啸裁撤的职位，现在已经有44%被智能机器所取代；英国牛津大学（University of Oxford）研究发现，随着机器人崛起，在20年内，美国有高达47%的

We are experiencing the most magical two events in human history: Internet and smart robots. They will fundamentally alter the global economic structure and social landscape. Second Age of Machine co-authored by Erik Brynjolfsson and Andrew McAfee points out that the robot will rapidly rise in the third industrial revolution.

According to The Economist, the third industrial revolution including robots is bringing a profound change to our life, work and global economic landscape. Previously we only could see robots in the film. Now, they are coming to us.

Robot tide surges

According to McKinsey Global Institute (MGI), in jobs cut because of the financial tsunami in 2008, now 44% are replaced by intelligent machines. In University of Oxford, the study found that, with the rise of robots, up to 47% of the jobs will be replaced by intelligent machines in the United States in 20 years. This will produce an impact on manufacturing, service and knowledge industries.

Boston Consulting Group in its report pointed out that China's manufacturing costs (including

工作岗位将被智能机器取代而成为高风险群体，不仅在制造业，还会影响到服务业与知识产业。

波士顿顾问公司（Boston Consulting Group）报告指出，2015年，随美国智能化程度提高，中国的制造成本（人事费用与物流费）将首度追上美国，低廉劳工优势不再。产值达2880亿美元的劳力外包市场将受到影响，全球资金也将重新分配。

麦肯锡调查分析，机器人的价格与劳动力的工资正好形成反向竞争，当中国制造业工资每年增长10-20%时，全球机器人的价格却每年下降10%。一台低阶机器人的价格，只是美国人年平均工资的一半；而它们的智慧却不断提升。

Google工程总监雷·科威尔（Ray Kurzweil）预言，15年后，人工智能就能追平人类；2045年，机器人的聪明度甚至超越人类大脑达10亿倍。

一场铺天盖地的机器人大潮，已经和正在从美国开始汹涌而来。



机器人引爆社会巨变

《商业周刊》的团队直接走访日本五个城市，在全球最大的机器人消费国与生产国，透过第一手资料，清晰看到机器人将对经济社会带来的惊人改变。

——机器人创造的产值巨大。日本经济产业省预测，2025年服务型机器人产值将超越工业机器人，达约新台币7700亿元。

——取代脑力工作者。据称每50名脑力工作者，就有1人的工作可能被机器人所取代。

——揽下1/3地面战。军事机器人制造成本为士兵薪俸的1/10。2015年，美国1/3的地面战将由机器人应战。

——6年后掀起失业潮。国际研究机构顾能预测，

labor and logistics) would be equivalent to that in the United States for the first time in 2015, so China would no longer possess the cheap labor advantage. Due to this, the labor outsourcing market of \$288 billion will be affected, and the global capital also will be redistributed.

McKinsey survey shows that robots compete with the labor. While wages in manufacturing industry of China grow by 10 to 20% a year, the global robot price falls by 10%. The price of a low-order robot accounts for a half of the wage of American, but the robot intelligence improves.

Google's engineering director Ray Kurzweil predicts that in next 15 years, artificial intelligence can match human brain, and in 2045, the robot intelligence even surpass human brain by 1 billion times.

The tide of the robot begins to surge out from the United States.

Robot sets off a great social change

Businessweek's team directly visited five cities in Japan which is the world's largest consumer and producer of robots. The results showed that the robot will bring about an amazing change, economic and social.

— To create a huge value. Japanese authorities forecast that the output value of service robots in 2025 will surpass that of industrial robots, which will be about NT770 billion.

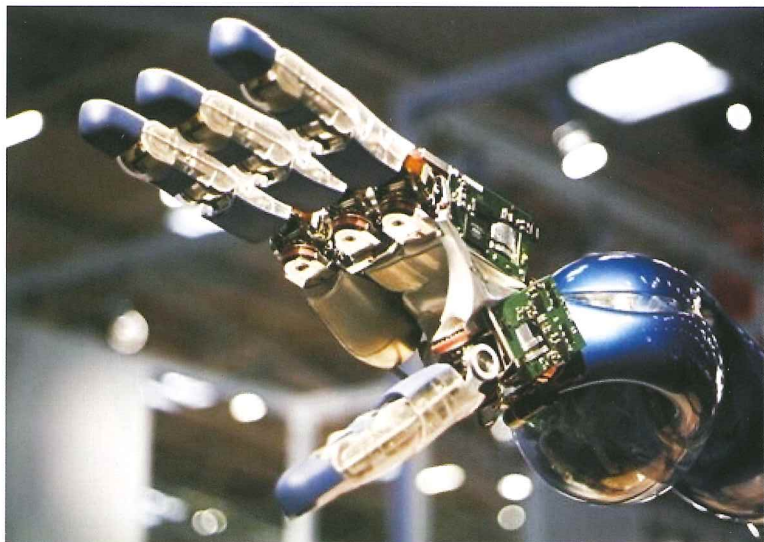
— To replace brainworkers. It is alleged that in every 50 mental workers, 1 mental worker will be replaced by the robot.

— To undertake 1/3 of ground battle tasks. The manufacturing cost of the robot is 1/10 of the salary of the soldier. In 2015, a third of America's battle tasks on the ground will be replaced by robots.

— After six years, unemployment may surge. An international research institution predicts that in 2020, the intelligent machine will set off layoffs, causing social unrest.

— To save two-thirds of labor cost. WIRED pointed out that the cost of using robots was only one-third of the labor cost.

— To eliminate 44% jobs. The McKinsey global institute survey, by the 2008 financial tsunami cut jobs, 44% has been replaced by automation.





2020年“智慧机器”将掀起一波失业潮，造成社会不安。

——省下2/3人力成本。《Wired》指出，采用机器人，仅为雇用跨国人力成本的1/3。

——取代44%职位。麦肯锡全球研究院调查，因2008年金融海啸所裁撤的职位中，44%已由自动化取代。

——节省1/2工资。《富比士》预测当工业机器人价格降至2万美元时，机器人将大幅取代劳工，目前最低价为2.5万美元，是美国年平均工资的一半。

——创造30兆产值。网络媒体Business Insider预测，机器人将是下一个产值达新台币30兆元的产业。

机器人到来，大则动摇全球经济版图与投资机会，小则影响个人就业及更换职业。

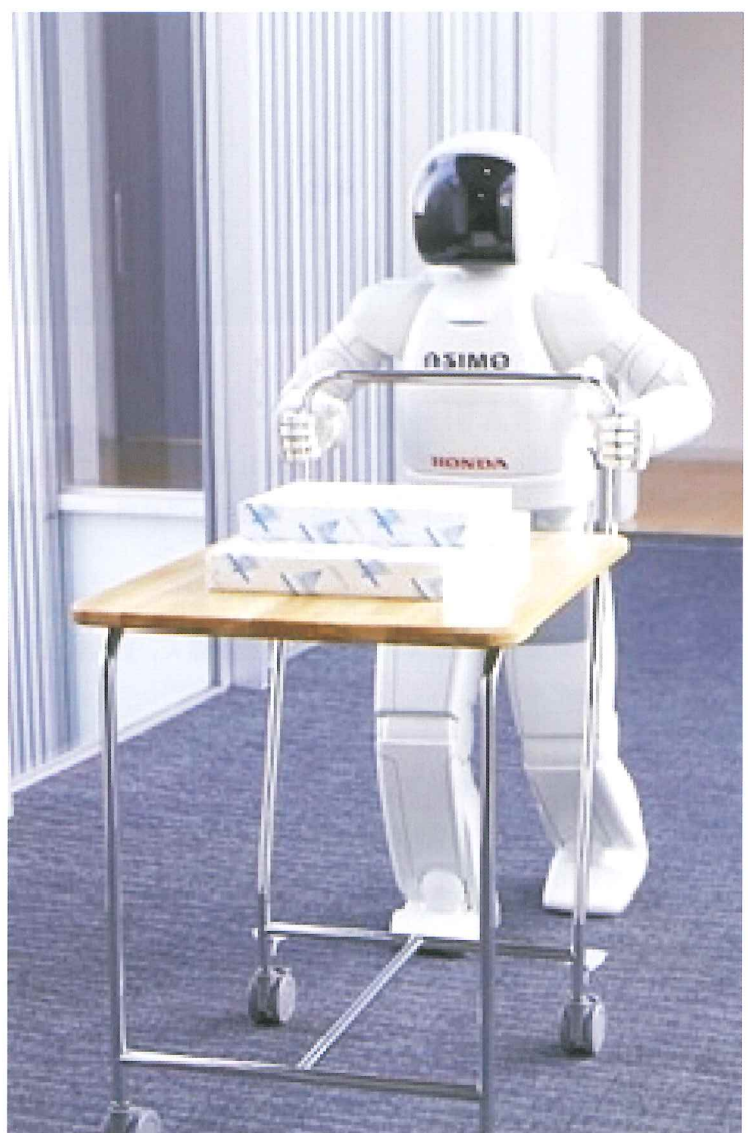


– To save a half of the pay. "Forbes" predicts that, when the industrial robot price drops to \$20000, then the robot will substantially replace the labor. At present, the the lowest price of the robot is \$25000, which is a half of average wage in the United States.

– To create a huge output value. Internet media Business Insider predicts that the robot will create a huge market. Robot can not only affect the global economic landscape and investment opportunities, but also affect the the individual employment and their career development.

Jobs that are expected to be replaced by robots

Robot has an impact on the job. Many jobs will be replaced by



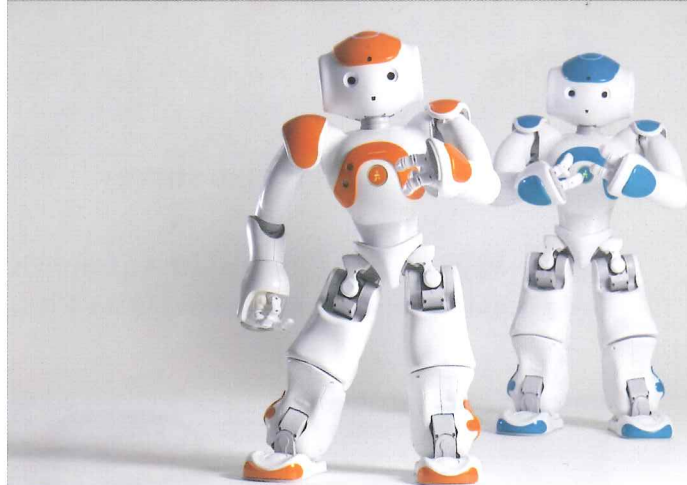
机器人意欲取代职位

机器人大潮首先冲击的是职场，许多职业岗位将被机器人取而代之。这是不以人们意志为转移的。日本媒体称：

“有一天，你的同事超过半数机器人，它们领着比你便宜的‘半薪’，还能连续24小时工作，完全不会疲惫。当你到银行时，接待的行员变成自动化机器，但它们的反应与聪明程度，却不亚于人类。这一天，正很快到来。”

根据牛津大学数据资料显示：机器人冲击职场，最先可能消失的12项职业是：1.电话营销员；2.校对员；3.手工裁缝师；4.数学家；5.保险核保人；6.钟表修理师；7.货运代理商；8.报税员；9.图像处理员；10.银行开户员；11.图书管理员；12.打字员等等。

机器人大潮，来势凶猛，锐不可当。（未完、待续）



robots. This is a trend. Japanese media said, "One day, 50% of your colleagues will be robots. They can work for 24 hours continuously and are not tired. When you go to the bank, the reception clerk will be a robot, and this robot is very clever. This day is coming soon."

Oxford University data shows that 12 jobs to be replaced by robots will be as follows: 1. telephone marketing officer; 2. proofreader; 3. manual tailor; 4. mathematician; 5. insurance inspector; 6. watch repair technician; 7. forwarding agent; 8. tax agent; 9. image processor; 10. bank account opening operator; 11. librarian; 12. Typist; and so on.

Robots will surge. This is a historical trend. (to be continued in next issue)

