

Cost-Benefit Analysis of Artificial Intelligence (AI) Fired Robots (AI-Bots) Replacing Educators

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ABSTRACT: In 2016, Buckingham University's Vice-Chancellor predicted that the educators will lose their traditional role in 10 years and effectively become little more than classroom assistants (2017, News.com.au. This is supported by the Georgia Institute of Technology's Computer Science Professor "Ashok Goyal", who has been using Jill Watson (AI-Bot) successfully since 2016 as a Teaching Assistant to help online students (2016, Hillary Lipko).

Jokes cracking Sophia (AI-Bot) by Hanson Robotics of Hong Kong mimics human beings. She appeared at Austin in the 2016 Interactive Festival and in the same year became a citizen of Saudi Arabia (2016, Sean Martin). Apparently, AI-Bots have already demonstrated superior performance in many areas. This poses a threat to educators of being replaced by AI-Bots. However, AI-Bots are expensive. The cost of the most advanced AI-Bot "ASIMO" by Honda in 2016 was US\$ 2.5 million (Honda.com). Most are afraid of being replaced by Robots. In 2017, Sophia urged, people in India, not to fear AI-Bots, but the 2017 Oxford University's study estimated that 47% of all U.S. jobs could be replaced by AI-Bots within 20 years. This trend is confirmed by the findings of the Center for Business and Economic Research at Ball State University, which attributed 85% of the 5.6m manufacturing job losses between 2000 to 2010 in the USA were due to technology.

The 2016 National Center for Education Statistics (NCES) shows that in 2015 a total of 1.6 million faculty (Full-Time 52%: Part-Time 48%) were employed in the degree granting postsecondary institutions, with total annual salary of \$131.4 billion. If 47% of all faculty lose their jobs over 10-15 years - It will result in a potential total savings of 61.75 billion in the 2015 US\$. Such a large amount of

savings will come at a cost of expensive AI-Bots and hiring of additional of IT Staff to keep the Bots working efficiently and effectively. Replacement is likely to start gradually with part-time to full-time faculty. As demonstrated by Georgia Tech, online part-time faculty is likely to be affected first followed by other part-time faculty teaching face-to-face courses. Next in line will be non-tenured faculty. Many colleges and universities have already stopped awarding tenures and others will follow suit. Because, under the contract to fire a tenured professor of any rank is almost impossible. However, they may leave voluntarily due to their own wish or offers of lucrative retirement packages.

Due to the expected replacement sequencing of the faculty, the above mentioned potential savings of 61.75 billion in the 2015 US\$, will be much less, because most of the part-time faculty is likely to be replaced first within next 10-15 years, whose average annual income is about one third of the full-time faculty (2013, The NPR Report). Assuming 50% of the part-time faculty is gradually replaced by AI-Bots as compared only 5% of full-time faculty in 15 years, it would result in a potential savings of little over 10.00 billion in the 2015 US\$. The estimated costs of such a large amount of savings, if not impossible to determine, can be estimated by the educated guess of at least 50% of the potential savings. Besides from the several demonstrated benefits of the AI-Bots, he estimated guess of the costs is based on the continued drop in the prices of all sorts of high-tech items and this trend is likely to continue in the future, even for AI-Bots.

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