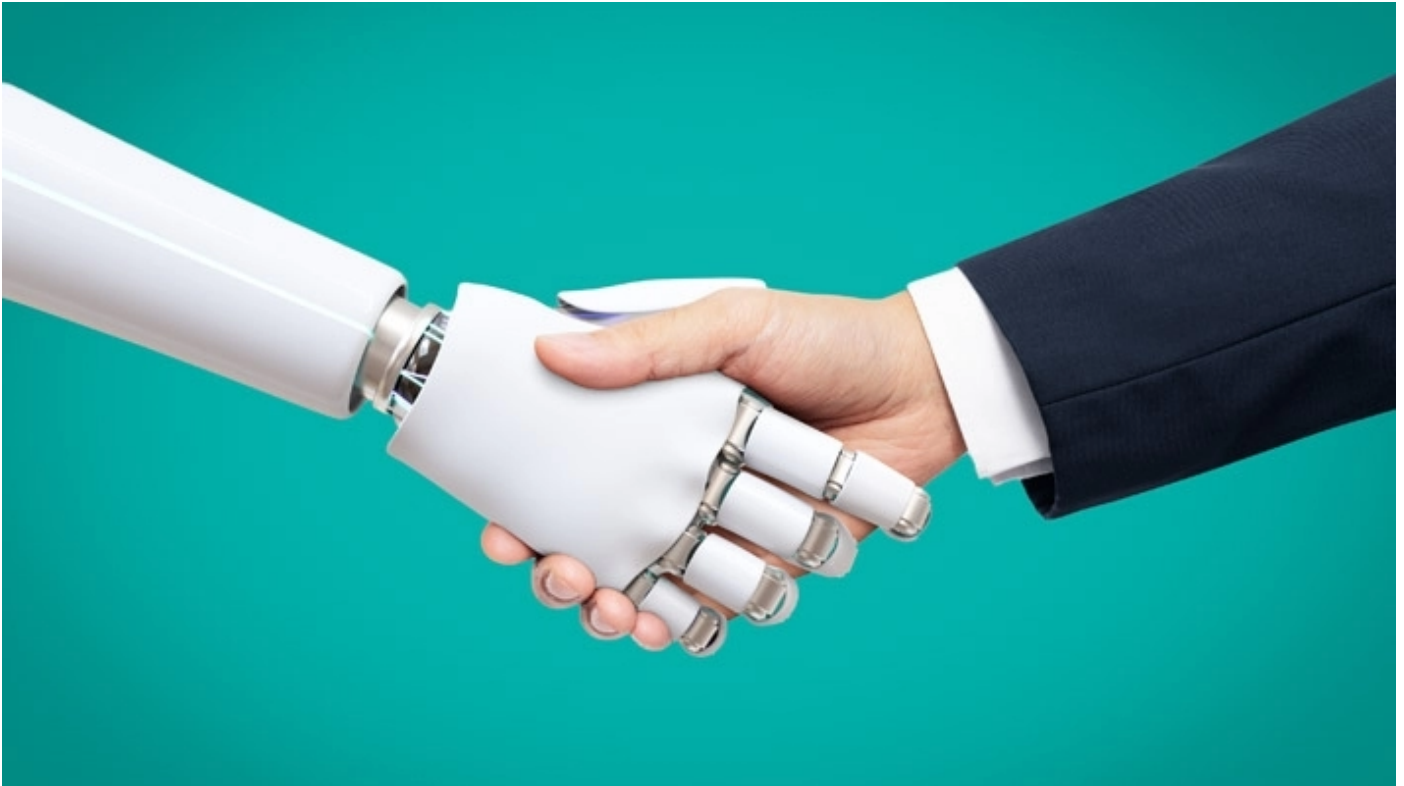# Transitioning from Education to Work during the 4th Industrial Revolution

01 March 2022

Dr. Touhid Bhuiyan, Lecturer in Cyber Security, Australian Institute of Business

The so-called Fourth Industrial Revolution (4IR) is changing the whole landscape of how we feel, how we work, how we live, how we travel and so on. If the 1st revolution is all about the steam engine, the 2nd revolution all about electricity, and the 3rd about the Internet and Computing, the 4th Industrial Revolution is adding Intelligence to its immediate predecessor and is transforming the whole world into an Intelligent Information Society.

Nowadays, a genome sequence can be acquired by using computing power in a few hours at the cost of less than one thousand dollars, while the first human genome project took 10 years at a cost of 2.5 billion dollars to map the human genome sequence. Therefore, to obtain faster solutions to a problem like this, increasing interaction between computing and genetic engineering is inevitable. Sensors are now widely used to collect data from the physical world (for instance, in fields such as agriculture, atmosphere, route network, traffic management and many others), facilitating the development of data prediction models by using machine learning tools. Therefore, predicting phenomena is becoming cheaper and more accurate, playing an important role in the decision-making process.

These faster solutions to problems and predictions of phenomena are both highly related to business analytics and business futures. Such an integration is enabling the exploration of new avenues of knowledge. Such an evolution is taking place in the cyber-physical space, which is extensively known as Fourth Industrial Revolution (4IR) or Industry 4.0.

In many parts of the world, Scandinavia for instance, human resources are being upskilled to take advantage of 4IR.Tthese countries have integrated Artificial Intelligence and Robotics into their education, starting from primary level to higher education, with an objective to prepare the cognitive mind of their human resources to lead the 4IR. The unique feature of this 4IR is that it is expanding faster than previous industrial revolutions.

The 4IR is creating significant impacts across the world, almost in every sector as well as in everyday life of people. It widely encompasses a wide range of areas including but not limited to Artificial Intelligence; Robotics and Automation; IoT and Smart Agriculture; Data Analytics and Cloud Computing; Cybersecurity; Communication and Networks Signal; 5G, Blockchain, Cognitive Computing and Nanotechnology; Quantum Computing; Natural Language Processing. Here is a potential daily application of 4IR technologies: a company CEO may check the weather

forecast and traffic congestion in the morning with Alexa, Google Assistant or Siri, go to their office using a self-driving car, be welcomed there by robots, predict business futures using Artificial Intelligence (AI), design business models using machine learning, control home appliances and electronics from office through the Internet of Things (IoT), and so on.

Educational institutions are the frontier institutions for responding to the challenges of 4IR and should act accordingly. Data is like gold in today's digital and social media-based world, for instance, Facebook generates 4 petabytes (a million gigabytes) of data per day and it requires AI and Machine Learning to extract patterns for the company's income generation. Currently, Data or Business Analytics is one of the most demanding programs in the world. Georgia Institute of Technology, USA, offers Master of Science in Data Analytics as a multidisciplinary program from School of Engineering, School of IT and School of Business. Similarly, the University of Western Australia offers a Master of Science in Business Analytics. Thousands of start-ups, SME businesses, online ventures have been successful, even during Covid, and this can only continue.

So, business education and IT in the 4th industrial revolution era are highly interlinked, and now we can't think of business without 4IR tools in the near future. If the educational institutions offering various business programs can effectively integrate 4IR technologies and methods within their curriculum, it will help them to continue their initiatives on a sustainable basis. Otherwise it may result in less productivity in terms of student demand and their job markets locally and globally. Therefore, educational institutions and IT/business industries should strengthen industry and academia linkage, and adopt emerging practices to produce quality graduates.

A report from the World Economic Forum indicated that "65% of children entering primary school today will ultimately end up working in completely new job types that don't yet exist.". Therefore, education is not a short-term thing anymore – it will be lifelong learning. The future jobs are the ones machines can't do but at the same time areas like creative endeavours, social interactions where humans beat machines, still remain open for job creation in the 4IR era. Now it is the right time for educationists and policymakers to rethink education policy with respect to 4IR and prioritize research and innovations to remain competitive, innovative and efficient.

Explore more **AIB review** articles.

Touhid Bhuiyan

Lecturer in Cyber Security, Australian Institute of Business

Dr. Touhid Bhuiyan is a Lecturer in Cyber Security at the Australian Institute of Business. He has received his PhD from Queensland University of Technology, Australia in the area of Information Security focusing on Trust Management for Intelligent Recommendations. Before joining at AIB, he worked for several Universities including Monash University, The University of Western Australia, Queensland University of Technology, University of Western Sydney and University of Malaysia Perlis.