Chapter 4
Role of Machine Learning in Artificial Emotional Intelligence

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ABSTRACT

The present world is overwhelmed with digital technologies: ubiquitous platforms of cloud computing and the internet of everything. Artificial intelligence (AI) is a technology that enables a machine to simulate human behaviour. The detailed facial expressions are captured by AI-enabled effective imaging and recognition processes of human vision. In artificial emotional intelligence (AEI), a new paradigm of human-computer interaction with AI-enabled cloud and internet connectivity could transpire healthy emotional intelligence (EI). As per the WHO world health report in 2018, globally, an estimated 264 million people are affected by depression and increased in recent years pertinent to COVID-19 lockdown-induced socio-economic factors. Hence, its paramount importance for the government and researchers to give serious consideration to developing EI. EI including human behaviours, digital well-being, and decision-making can be mentored using predictive data analytics. In this chapter, recent trends, preferrable ML algorithms, and research approach to EI components are discussed.

INTRODUCTION

Artificial intelligence can be referred to as a technology that enables a machine to resemble human behaviour and actions. Machine Learning is a branch of Artificial Intelligence. It helps the system grasp and

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enhances itself from the experiences without having to be specifically programmed. The term "Machine Learning" has been given by Arthur Samuel. With the help of the statistical methods, the algorithms present are trained in such a way that they can categorize as well as make predictions that help in revealing the key insights. They influence the decision-making process in further cases. Since the 1940s digital computers have been designed in such a way that they can perform different kinds of complicated tasks like deriving a mathematical formula or playing a game. Artificial intelligence is an important branch of computer science which is associated with making some highly intelligent machines that are capable of performing functions that require human intelligence. The field of artificial intelligence is a combination of computer science and of strong datasets that help us to enable problem-solving. Artificial intelligence has some very important applications in the real world. The following are some of its examples: speech recognition, customer service, computer vision, Robo-advisors, self-driving cars, etc.

The idea of the "Machine that thinks'' emerged around the late 1950s. In 1956, the term "Artificial Intelligence" was introduced by John McCarthy (Rajaraman, 2014). The first successful Artificial Intelligence software program was created in the year 1956 by Allen Newell, J.C. Shaw, and Herbert Simon (Newell et al., 1956). In 1967, Frank Rosenblatt built the first computer; it depends on the neural network, which learned everything through the terror method. As the years passed, different innovations were made in the world of artificial intelligence. Baidu's Minwa supercomputer used a convolutional neural network that can recognize and classify pictures with greater precision than the average human. Mattingly & Kraiger (2019) conducted around 58 tests based on emotional intelligence and its effect. Derek Leben had a strong belief that machines' judgement will be more valuable in the future since they make a reasonable judgement. In 2021, New York gave out 2,360 robotics pets that were capable of doing some physical movements and sounds. However, these pets could not meet the necessary emotional intelligent acceptance. Even today, artificial emotional intelligence has yet to obtain universal acceptance and adaptability in human and machine interaction pertinent to its complexity and challenges.

Artificial intelligence is its main goal and provides a base to solve problems independently. Machine learning is a key facilitator to solving problems at a greater speed than the human mind alone does. Data is the key to Machine Learning. The algorithms in Machine learning are the major reason for its success. The algorithms prepare mathematical models based on the data available to them. They help them in making decisions without being programmed explicitly. The ability to understand, utilize, handle, control and perceive emotions and detect emotions using artificial intelligence can be termed artificial emotional intelligence.

Machine Learning is widely useful in the following cases: Data security, Finance, Health care, Fraud detection, etc.

The following processes are used in Machine Learning processes: A selection technique, a blunders function followed by a model development technique. The systems learn and develop from experience through communicating with the people. Instead of coding each response, here in this case the system gets the opportunity to solve the situation and get practice making precise decisions.

The Neuro-inspired computing chips combine several talents stimulated by way of using neurobiological systems and could offer a power-green method to AI computing workloads.

- Many extraordinary varieties of neuro-inspired computing chips were developed over the previous few years, and diverse neuro-stimulated functions had been implemented in those chips, from the tool degree to the circuit and structure diploma (Cekic et al., 2022). Neuro-stimulated computing