A Comprehensive Survey on Artificial Intelligence in sustainable education

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Abstract

Sustainable education is an approach of aiming to establish the sustainability act in students, and communicate the values among schools, colleges and communities the values and motivations future-in one's own life, in their communities, and on a worldwide platform.Along with I.C.T. students, their fresher professionals also need an intelligent system that can understand each professional's learning needs and help them excel in their skills.

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1. Introduction

Artificial Intelligence (AI) gains rapid response in all aspects of human life. Day to day life has become changed after the wide-spreading adaptability of AI Researchers and AI scientists are making their unstinting efforts to make human life more comfortable and technologically advanced by using AI tools and techniques. Figure 1 is showing funding of AI startups in millions dollars from 2013 to 2019.
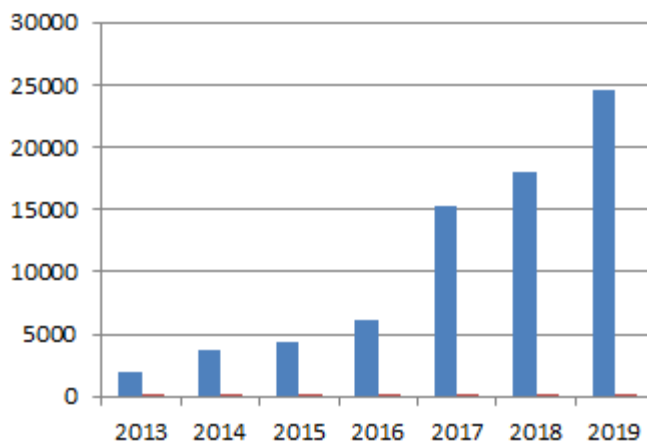

Fig 1: Funding of AI startup companies worldwide [1]

Education sector, warmly adopts Information Communication Technology (ICT) landscapes; A is one of the most used ICT paradigms in the education industry. ICT in the education sector has been hyper adopted. For instance, in France, practical computer education has been declared compulsory in primary schools. Furthermore, Learning Management systems (LMS) are widely adopted by an increasing number of educational institutes throughout the globe. From the past decade, an enormous increase in Massive Online Open Courses (MOOCs) demonstrates society's acceptability of online learning phenomena. These MOOCs s not only facilitate students by learning new technologies but also brighten their resumes by giving them a certificate, Nano degree, and even diplomas. With MOOCs,s massive online tutoring platforms like preply, khan academy, code hero, and many more indicate that the market trend of online learning is increasing[2].

During health emergency conditions of Covid 19 the last couple of years, online learning tools like zoom, M.S. Teams, Google meets etc[3, 4]. are more prevalent. This lockdown condition completes the term of online learning popular among all countries globally. African governments and underdeveloped Asian countries also adopted online learning mechanisms during the covid situation; hence students of all countries are familiar with the online learning paradigm[5].

Along with online learning services, Artificial Intelligence, Virtual Reality (VR), and Augmented Reality (AR) have also been adopted progressively in the education domain. VR's use cases in the learning process are widely seen in a medical study where simulations of surgical theatre are used to train medical students, particularly for complex surgery like brain tumor operation. Similarly AR apps are widely adopted in a simulation of intensive complex subjects. The use of the A.R. app to 3D and 4D modeling has started developing to facilitate model designs.

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- Content that needs to be learned
- Teaching methodology
- Student assessment criteria
- Intelligent agents

This paper's primary goal is to investigate the role of AI I n sustainable education. The rest of paper is formatted as following. Background for domain knowledge will be presented section II. Sections III will focus on the designed framework of narrative overview. Section IV, will offer a discussion on literature review. At the last, conclusion and future research direction will be presented.

2. Background

This section will present preliminary information about sustainable education, AI, and its branches used in education like machine learning, reinforcement learning, and neural networks. This discussion will help readers grasp technical knowledge of AI branches and their possible use in education. Also, we will discuss so far investigated use of AI subdivisions in education.

2.1 Sustainable education:

Sustainable education is a concept of active academic participation for improving life style by implementing economic, environmental and social program. [6]
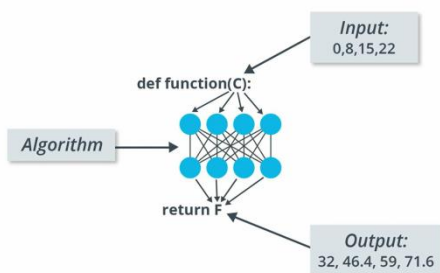

Fig 2: Example of neural networks

2.4 AI-ED

The history of AI in the education area can be started from the first teaching machine by Sidney Pressey in 1924. That machine works to help students find correct answers to multiple-choice questions. Skinner teaching

machine in 1954 can bethink as the next step to AI in education. Skinner machine is the first commercial machine for the education sector. This machine was based on the idea that the human mind constantly changes its response to an external element. These machines are composed of mostly fill in the blanks worksheets. If the student gave the correct answer system will ask the following question; otherwise, it is reinforced by providing the correct answer[7]

3. Conclusion:

Sustainable education is an approach of aiming to establish the sustainability act in students, and communicate the values among schools, colleges and communities the values and motivations future – in one's own life, in their communities, and on a worldwide platform.Along with I.C.T. students, their fresher professionals also need an intelligent system that can understand each professional's learning needs and help them excel in their skills.

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