OPTIMAL FEATURE EXTRACTION TECHNIQUES TO IDENTIFY PRINCIPAL LEARNERS' ACTIVITIES FOR PERSONALIZED LEARNING OUTCOME IN E-LEARNING

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Abstract

In recent years, the pedagogy is greatly influenced by the advancement in E-Learning. Academic performance of the learner depends on the teaching and learning activities. E-learning, in contrast to traditional education, places a greater emphasis on student-centered learning and is built around learning activities. The most effective E-Learning activities for the creation of any virtual course are continually being developed by researchers. However, adapting to online activities and achieving the desired learning outcome varies from learner to learner. It is generally observed that the learners attain the learning outcome much faster if guided with their preferred learning activities. Identifying the most preferred learning activities of a learner will ensure quicker learning capacities. The focus of this work is to employ feature extraction techniques such as Principal Components Analysis (PCA), Independent Component Analysis (ICA), and Linear Discriminant Analysis (LDA) to recognize the principal learning activities for personalized learning outcome.

Keywords: Learning Activities, Personalization, E-Learning, Principal Components Analysis (PCA), Independent Component Analysis (ICA), Linear Discriminant Analysis (LDA)

I. INTRODUCTION

There are significant developments and advancements in information and communication technology, and the modern educational system is becoming more and more technology-driven (ICT). It has created a thirst for introducing novelty and enhancement in pedagogy and the advancement, enhancement, novelty in the teaching and learning process are essential [1]. The goal of the eLearning system is to recognise the desire and requirements of various participants in the educational process, including students, teachers, and the tutors. The efforts made by eLearning systems to recognise the suitable learning activities are constantly emerging and still getting matured.