

Chapter 8

Smart Education Systems Using the Internet of Behavior– Based Computational Intelligence

M. Swathi Sree

Stanley College of Engineering and Technology for Women, India

C. Kishor Kumar Reddy

Stanley College of Engineering and Technology for Women, India

Marlia Mohd Hanafiah

Universiti Kebangsaan Malaysia, Malaysia

Kari Lippert

 <https://orcid.org/0000-0002-5464-2186>

University of South Alabama, USA

ABSTRACT

Smart education systems are changing quickly thanks to the Internet of Behavior (IoB) and Computational Intelligence (CI). Innovating, personalised, and adaptive learning environments through the combination of IoB and CI is the focus of this paper. Deep insights into student engagement, learning preferences, and performance are provided by the IoB, which collects and analyses behavioural data from a variety of digital and physical interactions. Computational intelligence uses this data to customise educational interventions and content to the needs of specific

DOI: 10.4018/979-8-3693-8151-9.ch008

Copyright © 2025, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

learners. It includes methods like machine learning, neural networks, and predictive analytics. IoB and CI together enable personalised feedback, enable early detection of learning difficulties, and allow for real-time adaptation of teaching strategies in smart education systems. This integration maximises group dynamics, fosters effective peer learning, and enhances collaborative learning. It not only facilitates the implementation of behavioural nudges to support positive educational practices.

I. INTRODUCTION

The development of intelligent teaching behaviour recognition and analysis system tools is currently the main focus of classroom teaching and learning behaviour analysis based on artificial intelligence technology. These systems primarily use classroom speech information as the basis for recognition, while there is still a slight lack of analysis in the area of classroom nonverbal behaviour. While quantitative and practical research on classroom teaching behaviour analysis theory is still relatively rare, research on classroom teaching behaviour theory focuses on investigating classroom teaching modes and teaching evaluation indicators (Boren Gao et al, 2021). As a result of the current setup, which primarily relies on manual observation to document and annotate classroom behaviour, classroom teaching and learning behaviour analysis has resulted in significant resource consumption, both human and material, and is primarily constrained by the observers' subjective consciousness and attention span. As a result, there is no assurance regarding the impartiality and promptness of the analysis procedure or its outcomes. According to recent studies, India's national-level variables are driving the expansion of online education in the nation. With all levels of government actively supporting this growth, it is anticipated that this industry will continue to expand in the years to come. The Middle East is among the last regions to adopt online learning. The main barriers to the expansion of online education in Middle Eastern countries, according to previous research, are low internet penetration, poor public regard for online learning, and a dearth of Arabic-language online educational resources (Callo, E. C , et al.,2020). Educational programmes have changed over time to accommodate students' changing needs, and the increasing use of online courses by both public and private institutions is encouraging the creation of learning platforms with lower training and course costs. Universities and colleges must use a cloud technology known as “online proctoring” in order to implement these new teaching methods. Using webcams and internet connections, online proctoring programmes, also known as remote proctoring, are digital methods of keeping an eye on and managing student behaviour during exams (Arnò, S. et al.,2021). So, averting and identifying any potential for malpractice. OLPs use an online tool to log and examine exam-

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/smart-education-systems-using-the-internet-of-behavior-based-computational-intelligence/358983

Related Content

Adaptive Study Design Through Semantic Association Rule Analysis

Ping Chen, Wei Ding and Walter Garcia (2011). *International Journal of Software Science and Computational Intelligence* (pp. 34-48).

www.irma-international.org/article/adaptive-study-design-through-semantic/55127

Computational Intelligence Using Type-2 Fuzzy Logic Framework

A. Neogi, A.C. Mondal and S.K. Mandal (2013). *Handbook of Research on Computational Intelligence for Engineering, Science, and Business* (pp. 1-29).

www.irma-international.org/chapter/computational-intelligence-using-type-fuzzy/72487

Deep Learning for Big Data Analytics

Priti Srinivas Sajja and Rajendra Akerkar (2019). *Nature-Inspired Algorithms for Big Data Frameworks* (pp. 1-21).

www.irma-international.org/chapter/deep-learning-for-big-data-analytics/213028

The Formal Design Models of a Universal Array (UA) and its Implementation

Yingxu Wang, Jason Huang and Jingsheng Lei (2011). *International Journal of Software Science and Computational Intelligence* (pp. 69-89).

www.irma-international.org/article/formal-design-models-universal-array/60750

Evaluation Model of Cognitive Distraction State Based on Eye Tracking Data Using Neural Networks

Taku Harada, Hirotoishi Iwasaki, Kazuaki Mori, Akira Yoshizawa and Fumio Mizoguchi (2014). *International Journal of Software Science and Computational Intelligence* (pp. 1-16).

www.irma-international.org/article/evaluation-model-of-cognitive-distraction-state-based-on-eye-tracking-data-using-neural-networks/114093