Automating Classroom Processes: Assessing the Efficiency and Effectiveness of Robot Assistants in Higher Education Management Tasks

1st Fuad Budagov
School of Information Technologies
Tallinn University of Technology
Tallinn, Estonia
fuad.budagov@taltech.ee
ORCID 0000-0003-1762-2263

2nd Janika Leoste
School of Information Technologies
Tallinn University of Technology,
Tallinn University
Tallinn, Estonia
janika.leoste@taltech.ee
ORCID 0000-0001-6919-0082

3rd Mohammad Tariq Meeran
School of Information Technologies
Tallinn University of Technology
Tallinn, Estonia
mohammad.meeran@taltech.ee
ORCID 0000-0002-8567-7285

4th Tarmo Robal
School of Information Technologies
Tallinn University of Technology
Tallinn, Estonia
tarmo.robal@taltech.ee
ORCID 0000-0002-7396-8843

***Abstract* —** The increasing demands in higher education, including the need for personalized instruction, diverse student engagement, and time-intensive administrative tasks, present significant challenges to educators. Robot assistants offer a promising solution for automating classroom processes and reducing administrative workload. This paper examines the efficiency and effectiveness of robot assistants in higher education, focusing on administrative tasks such as attendance monitoring. The literature review reveals that robot assistants have been utilized to simplify various administrative tasks, including attendance tracking through facial and fingerprint recognition, transcribing lectures, and automating grading processes. These systems significantly reduce the workload of educators, allowing them to dedicate more time to direct teaching and enhancing student engagement.

A pilot study conducted with the TEMI robot in a university setting demonstrated the potential for automating attendance checks using AI-driven facial recognition technology. The findings indicate high user satisfaction and accuracy, yet concerns about privacy and data security persist, particularly regarding compliance with GDPR regulations. Despite these challenges, the use of robot assistants shows considerable promise in enhancing operational efficiency in higher education, offering a practical approach to improving administrative processes while maintaining a focus on teaching quality. Future research should address privacy concerns and explore further applications of robot assistants in diverse educational settings to maximize their impact.

***Keywords* —** *robot assistants, administrative task, attendance check, facial recognition, higher education*