

**UNIVERSITI TEKNOLOGI MARA**

**LEARNIFY: SECURING ONLINE  
LEARNING THROUGH FACIAL  
RECOGNITION**

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## ABSTRACT

The Learnify system solves vital attendance management difficulties in e-learning through its development of a platform that integrates facial recognition features. The benefits that e-learning platforms provide students with educational access beyond traditional classrooms are hindered by their inability to create reliable attendance tracking which causes students to cheat and places extra workload on administrative staff. Learnify implements automation for attendance tracking through the combination of Python (Flask) and OpenCV with MySQL to address these problems. The problem identification phase established that manual and semi-automated attendance systems lacked accuracy and data integrity thus requiring replacement. The development of the system under the Waterfall methodology followed a sequential process starting from planning through requirements analysis into system architecture design then implementation and verification stages. Lab tests demonstrated that the system achieved 60% recognition success through methods including facial data capture using OpenCV and processing with a CNN-based recognition model, while confidence scores were compared against established thresholds. Users gave positive feedback about usability through System Usability Scale (SUS) ratings. The system modules for attendance tracking along with reporting and user management achieved valid results that satisfied user demands and research criteria. Learnify creates better interaction and fairness in online learning by implementing automated attendance tracking systems that provide immediate record security. The two-semester period of the project led to Learnify becoming a flexible solution for school attendance management that demonstrates opportunities for additional development in upcoming software versions.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

The introduction chapter of the project study provides a comprehensive overview by describing the background of study and problem statement. Next, the study presents the research objectives and research questions, followed by an explanation of the project's scope and limitations. The project's importance is emphasized, and the chapter ends with a summary of the covered topics.

### 1.2 Background of Study

It is very important to emphasize how important an e-learning system is for users. E-Learning refers to the utilization of electronic technology to access educational programs through the internet (Zahedi & Dehghan, 2019). A lot more people can get an education now that e-learning is all around. When students are learning online, the synchronous environment lets them talk to each other and their lecturers at the same time, which can help to break down the barriers of distance. E-learning has been shown to help students remember things better (25–60%) than traditional classrooms (8–10%) and to help them learn faster (40–60% less time) (Agrawal et al., 2023). According to Ozdamli et al. (2022), a method that keeps helping lecturers and students teach and learn globally is distance learning through online resources. Online learning resources and technology can help students develop effective self-directed learning skills. Students can identify the material they need to learn, find and utilize online resources, use that information to complete assignments, take tests, and even evaluate the feedback that results. Furthermore, keeping track of attendance is important in e-learning environments for many reasons. One important thing is to keep an eye on how engaged students are with the course material. Lecturers can see how involved their students are in their online classes by keeping track of attendance. This lets them know how many assignments are being turned in and how much time is being spent on learning material. This information can help them Figure out how involved and interested their students are in the e-learning environment.