



UNIVERSITI TEKNOLOGI MARA

**SAVVY AUTOMATIC LIGHTING WITH ENTRY
MONITORING SYSTEM**

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ABSTRACT

Artificial intelligence (AI) technology has evolved to become a major topic of discussion in recent years, especially in the context of outdoor sports. Simultaneously, the rise of the Internet of Things (IoT) has resulted in a multitude of applications across numerous domains, such as robots, artificial intelligence, and other aspects of technology. This essay explores the specifics of the Savvy Automatic Lighting and Entry Monitoring technology, a complex technology that combines critical user safety with efficient use of energy. This system's major objective is to provide a substantial contribution to the ongoing improvement of outdoor court infrastructure, in line with the revolutionary technological advancements in the sports industry. The usage of an intuitive Integrated Development Environment (IDE) and the Arduino Uno are key components in the complex design and implementation of this multifunctional system. The fundamental simulation task involves the difficult construction of a thorough simulation model, which is then finely coded to maximize Arduino Uno capability. This system is a testament to the smooth integration of AI and IoT as we navigate their complex environment, leading the outdoor sports industry into a new era characterized by improved energy efficiency, user safety, and the combination of cutting edge technology. This piece captures the continual process of developing a sensible outdoor sports solution while appreciating the mutually beneficial relationship between technology and exercise.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

From the Law Offices of James F. Aspell, P.C., it is recognized that people who slip on wet floors can suffer various injuries depending on the nature of their fall. Injuries such as broken bones, muscle sprains or strains, traumatic brain injury (TBI), and paralysis can result from accidents on wet surfaces[1]. Notably, the National Floor Safety Institute (NFSI) reports that one in every three people over the age of 65 experiences a fall each year in the United States[2]. Beyond the legal perspective, the significance of safety extends to recreational activities, as emphasized by the Tennis Lessons Singapore. tennis under the starlit sky is a refreshing and rewarding experience that grants players multiple benefits, from cooler temperatures to potentially improved visibility and flexibility[3].

As we delve into the arena of outdoor sports, particularly tennis, the imperative for a well-lit court with a robust safety system becomes apparent. Ensuring a safe environment for players is not only a legal concern but also a pivotal aspect of enhancing the overall experience of sports enthusiasts. This project aims to address these multifaceted challenges by introducing the Savvy Automatic Lighting and Entry Monitoring System. By providing an innovative solution that combines energy efficiency with user safety, this system seeks to contribute to the advancement of outdoor court facilities.

1.2 Problem Statement

The absence of proper safety measures can lead to injuries on wet courts, with slippery surfaces posing risks of falls and sprains. Prioritizing safety is crucial when deciding whether to play on a wet court[4]. The real-world impact of this situation is exemplified by an incident involving veteran NBA player Vince Carter, who slipped on a wet floor during a game in Charlotte, resulting in an injury[5]. To address these concerns, especially for those who enjoy playing at night, the implementation of LED court lighting systems is essential, as they offer improved visibility. Conversely, some outdoor courts still rely on manual lighting systems, which can lead to energy waste if the lights are not switched off after use.

In response to these challenges, the Savvy Automatic Lighting and Entry Monitoring System has been developed. This system aims to conserve energy by avoiding unnecessary illumination when the court is not in use. Additionally, it serves the purpose of alerting court users to any hazardous situations within the playing area.