

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN, ANALYSIS AND  
FABRICATE REMOTE  
CONTROLLED MINI FORKLIFT**

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## **ABSTRACT**

Nowadays the integration of remote-controlled technologies into industrial machinery has revolutionized traditional workflows, enhancing efficiency and safety. Among these advancements, the remote-controlled mini forklift stands out as a versatile tool for material handling in confined spaces, offering precise maneuverability and reducing operational risks. Conventional forklifts often encounter challenges when operating in tight or hazardous spaces, leading to inefficiencies and safety concerns. These limitations underscore the need for a compact, remotely controlled solution capable of navigating confined areas with ease while maintaining operational effectiveness. The primary objective of this project is to design and implement a remote-controlled mini forklift tailored to address the shortcomings of conventional counterparts. By leveraging advanced control systems and compact design principles, the aim is to enhance maneuverability, increase operational flexibility, and improve overall safety in material handling operations. The development process will involve a combination of hardware and software engineering methodologies, starting with designing a robust chassis and integrating precision control mechanisms. Rigorous testing and iterative refinement will ensure the final product meets performance standards and user requirements. Upon completion, the project anticipates the deployment of a functional prototype demonstrating the capabilities of the remote-controlled mini forklift, including enhanced maneuverability in confined spaces, improved safety through remote operation, and increased efficiency in material handling tasks, promising to elevate logistics operations by offering a scalable solution.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of Study**

The traditional lifting method, from manual handling to the modern use of forklifts, has evolved significantly over time to enhance safety and efficiency in lifting heavy objects. Historically, manual lifting involved physical exertion and posed risks of injury due to improper techniques. As industrialization progressed, the need for safer and more effective lifting solutions became apparent, leading to the development of forklifts in the early 20th century.

Forklifts revolutionized material handling by providing a powered industrial truck capable of lifting and moving heavy loads over short distances. These machines, equipped with hydraulic systems and various attachments, have become indispensable in warehouses, construction sites, and other industrial settings, offering a reliable and standardized method for lifting heavy items with precision and reduced risk of injury.[1]

Despite their advantages, mini forklifts pose unique challenges related to operator safety and efficient operation. Operators require proper training and licensing to ensure safe handling of these machines, while visibility issues and the risk of accidents due to poor maneuverability in confined spaces must be addressed. Maintaining safe speed limits and awareness of blind spots are crucial to prevent collisions and ensure workplace safety, highlighting the importance of comprehensive operator training and adherence to safety protocols.[2]

Through the integration of advanced control systems and compact design principles, the remote-controlled mini forklift project aims to address the challenges associated with conventional forklifts in confined spaces. Through this project, an enhancement and redesigning the RC mini forklift will be done by using state-of-art SolidWorks 2019. By providing operators with a safe, efficient, and versatile tool for material handling, the project aims to enhance productivity and safety in various