

## الاستهلال

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى

(وَمِنْ آيَاتِهِ أَنْ يُرْسِلَ الرِّيَّاحَ مُبَشِّرَاتٍ وَلِيُذِيقَكُمْ مِنْ رَحْمَتِهِ وَلِتَجْرِيَ الْفُلُكُ بِأَمْرِهِ  
وَلِتَبْتَغُوا مِنْ فَضْلِهِ وَلَعَلَّكُمْ تَشْكُرُونَ)

صِرُّو لِلَّهِ الْعَظِيمِ

(الروم: ٤٦)

# **DEDICATION**

We dedicate this project to our mothers, who gave us kindness and love . And our fathers, who gave us affection and ambitions . All our families , and everyone who became a bright light to illuminate the way in front of us . To them, we say: Thanks for all your support and patience .

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# ABSTRACT

Lack of space availability has always been a problem in urban areas and major cities and to add to it there are cars parked callously on the streets that further limit the space. In order to handle the issue of parking in busy places various types of vehicle parking systems are used worldwide namely Multi-level Automated Car Parking, Automated Car Parking System and many more. The present project work is an amalgamation of the already developed parking systems with the added advantage of reduced space occupancy by the design of a simpler and compact parking system that is rotary and occupies vertical parking space. The platform is fabricated to suit the working model. The procurement and manufactured items are in hand and are ready to be assembled with the structure. This model is further useful for various branches of engineering in order to develop different types of automations like PLC, micro controller and computerization. By testing and analyzing the working model we can definitely get the view to develop the parking lots at difficult and busy commercial places. Finally after implementing all development proposals, we get an automated parking system which stores car and retrieves them automatically, need a small area to park number of cars and easy to find parking slots.

## المستخلص

لما كان نقص توافر المساحة دائما مشكلة في المناطق الحضرية والمدن الكبرى، وإضافة إلى ذلك هناك سيارات متوقفة بشكل خاطئ في الشوارع و التي تحد من الفضاء. من أجل التعامل مع مسألة وقوف السيارات في الأماكن المزدحمة واستخدام أنواع مختلفة من أنظمة مواقف السيارات في جميع أنحاء العالم وهي متعددة المستويات مثل مواقف السيارات الآلية أنظمة وقوف السيارات الآلية وغيرها الكثير. عمل المشروع الحالي هو دمج أنظمة وقوف السيارات المتقدمة بالفعل مع ميزة إضافية من انخفاض شغل الفضاء من خلال تصميم نظام أكثر بساطة و أقل حجما يجعل وقوف السيارات دائريا ويحتل مساحة وقوف عمودية. تصميم يتناسب مع نموذج العمل. المشتريات والمواد المصنعة هي في متناول اليد وهي جاهزة ليتم تجميعها مع هيكل. هذا النموذج هو أكثر فائدة لمختلف فروع الهندسة من أجل تطوير أنواع مختلفة من الأتمتة مثل التحكم الجزئي والحوسبة. كذلك من خلال اختبار وتحليل نموذج العمل يمكننا بالتأكيد الحصول على وجهة نظر لتطوير مواقف السيارات في أماكن تجارية صعبة ومشغولة. أخيرا و بعد تنفيذ جميع مقترحات التطوير نحصل على نظام موقف سيارات آلي يقوم بتخزين و استرجاع السيارات آليا، يحتاج مساحة صغيرة لتخزين عدد من السيارات مع سهولة ايجاد فتحات المواقف.

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## LIST OF ABBRIVIATIONS

APS	Automated Parking System
IOT	Internet Of Things
MAPS	Modular Automated Parking System
RPS	Rotary Parking System
HMI	Human Machine
CBD	Central Business District
WSN	Wireless Sensor Network
GPS	Global Positioning System
CPS	Cyber Physical System
RSPS	Reservation-based Smart Parking System
IR	Infrared Sensor