VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI – 590018, Karnataka

INTERNSHIP REPORT

ON

"Automated Parking System Using ML"

Submitted in partial fulfilment for the award of degree(18CSI85)

**BACHELOR OF ENGINEERING IN
YOUR BRANCH**

Submitted by:

KOKILA S

1MV19ET021

Conducted at
Compsoft Technologies

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Department of Electronics and Telecommunications

Accredited by NBA, New Delhi

International Airport Road, Hunasamaranahalli, Yelahanka, Sir M Visvesvaraya Inst Rd, Yelahanka, Bengaluru, Karnataka 562157

CERTIFICATE

This is to certify that the Internship titled **"Automated Parking System Using ML"** carried out by **Mr. RKH,** a bonafide student of Sir M Visvesvaraya Institute of Technology, in partial fulfillment for the award of **Bachelor of Engineering**, in **ELECTRONICS AND TELECOMMUNICATIONS** under Visvesvaraya Technological University, Belagavi, during the year 2022-2023. It is certified that all corrections/suggestions indicated have been incorporated in the report.

The project report has been approved as it satisfies the academic requirements in respect of Internship prescribed for the course Internship / Professional Practice (18CSI85)

Signature of Guide   **Signature of HOD**   **Signature of Principal**

External Viva:

Name of the Examiner   Signature with Date

1)_____
_____

2)_____
_____

D E C L A R A T I O N

I, **KOKILA S**, final year student of Electronics and Telecommunications, Sir M Visvesvaraya Institute of Technology, - 562157, declare that the Internship has been successfully completed, in **COMPSOFT TECHNOLOGIES**. This report is submitted in partial fulfillment of the requirements for award of Bachelor Degree in Electronics and Telecommunications, during the academic year 2022-2023.

Date :23-September-2022

Place : Bangalore

USN : 1MV19ET021

NAME : KOKILA S

OFFER LETTER

INTERNSHIP OFFER LETTER

Date: **23rd August, 2022**

Name: **Kokila S**
USN: **1MV19ET021**

Dear Student,

We would like to congratulate you on being selected for the **Machine Learning With Python(Research Based)** Internship position with **Compsoft Technologies**, effective Start Date **23rd August, 2022**, All of us are excited about this opportunity provided to you!

This internship is viewed as being an educational opportunity for you, rather than a part-time job. As such, your internship will include training/orientation and focus primarily on learning and developing new skills and gaining a deeper understanding of concepts of **Machine Learning With Python(Research Based)** through hands-on application of the knowledge you learn while you train with the senior developers. You will be bound to follow the rules and regulations of the company during your internship duration.

Again, congratulations and we look forward to working with you!.

Sincerely,

Nithin K. S
Project Manager
COMPSOFT TECHNOLOGIES
No. 363, 19th main road,
1st Block Rajajinagar
Bangalore - 560010

A C K N O W L E D G E M E N T

This Internship is a result of accumulated guidance, direction and support of several important persons. We take this opportunity to express our gratitude to all who have helped us to complete the Internship.

We express our sincere thanks to our Principal, for providing us adequate facilities to undertake this Internship.

We would like to thank our Head of Dept – branch code, for providing us an opportunity to carry out Internship and for his valuable guidance and support.

We would like to thank our (Lab assistant name) Software Services for guiding us during the period of internship.

We express our deep and profound gratitude to our guide, Guide name, Assistant/Associate Prof, for her keen interest and encouragement at every step in completing the Internship.

We would like to thank all the faculty members of our department for the support extended during the course of Internship.

We would like to thank the non-teaching members of our dept, forhelping us during the Internship.

Last but not the least, we would like to thank our parents and friends without whose constant help, the completion of Internship would have not been possible.

NAME:KOKILA S
USN:1MV19ET021

ABSTRACT

The main aim that we have is to create a completely automated car parking system with minimal human interference. With the rising population in the world, time is of the essence and hence we need to minimize the time taken by trivial activities such as finding a place to park in a busy place and avoid traffic congestion. We have seen in existing systems sometimes accidents can occur in parking situations by cars going at high speed o caused by frustrated drivers unable to find a parking space for a long period of time. In our project we propose a smart and automated car parking model that will help the user in booking their parking spaces beforehand and the vehicle will be able to park automatically once in the parking zone .The difference between our project of automated car parking systems is we hope to minimize human interaction as much as possible and make both the vehicle and the parking area fitted with sensors that will help us execute a safe and efficient way of parking. Hence, we aim to provide a completely safe and automated experience that is robust and can be implemented in real time and hopefully be implemented as the general norm for parking systems in the future.

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CHAPTER 1

COMPANY PROFILE

1. <u>COMPANY PROFILE</u>

A Brief History of Compsoft Technologies

Compsoft Technologies, was incorporated with a goal "To provide high quality and optimal Technological Solutions to business requirements of our clients". Every business is a different and has a unique business model and so are the technological requirements. They understand this and hence the solutions provided to these requirements are different as well. They focus on clients requirements and provide them with tailor made technological solutions. They also understand that Reach of their Product to its targeted market or the automation of the existing process into e-client and simple process are the key features that our clients desire from Technological Solution they are looking for and these are the features that we focus on while designing the solutions for their clients.

Sarvamoola Software Services. is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Sarvamoola Software Services. specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements.

Compsoft Technologies, strive to be the front runner in creativity and innovation in software development through their well-researched expertise and establish it as an out of the box software development company in Bangalore, India. As a software development company, they translate this software development expertise into value for their customers through their professional solutions.

They understand that the best desired output can be achieved only by understanding the clients demand better. Compsoft Technologies work with their clients and help them to defiine their exact solution requirement. Sometimes even they wonder that they have completely redefined their solution or new application requirement during the brainstorming session, and here they position themselves as an IT solutions consulting group comprising of high caliber consultants.

They believe that Technology when used properly can help any business to scale and achieve new heights of success. It helps Improve its efficiency, profitability, reliability; to put it in one sentence " Technology helps you to Delight your Customers" and that is what we want to achieve.

CHAPTER 2

ABOUT THE COMPANY

2. <u>ABOUT THE COMPANY</u>

Compsoft Technologies is a Technology Organization providing solutions for all web design and development, MYSQL, PYTHON Programming, HTML, CSS, ASP.NET and LINQ. Meeting the ever increasing automation requirements, Compsoft Technologies specialize in ERP, Connectivity, SEO Services, Conference Management, effective web promotion and tailor-made software products, designing solutions best suiting clients requirements. The organization where they have a right mix of professionals as a stakeholders to help us serve our clients with best of our capability and with at par industry standards.They have young, enthusiastic, passionate and creative Professionals to develop technological innovations in the field of Mobile technologies, Web applications as well as Business and Enterprise solution. Motto of our organization is to "Collaborate with our clients to provide them with best Technological solution hence creating Good Present and Better Future for our client which will bring a cascading a positive effect in their business shape as well". Providing a Complete suite of technical solutions is not just our tag line, it is Our Vision for Our Clients and for Us, We strive hard to achieve it.

Products of Compsoft Technologies.

Android Apps

It is the process by which new applications are created for devices running the Android operating system. Applications are usually developed in Java (and/or Kotlin; or other such option) programming language using the Android software development kit (SDK), but other development environments are also available, some such as Kotlin support the exact same Android APIs (and bytecode), while others such as Go have restricted API access.

The Android software development kit includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and zutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows 7 or later. As of March 2015, the SDK is not available on Android itself, but softwaredevelopment is possible by using specialized Android applications.

Web Application

It is a client–server computer program in which the client (including the user interface and client- side logic) runs in a web browser. Common web applications include web mail, online

retail sales, online auctions, wikis, instant messaging services and many other functions. web applications use web documents written in a standard format such as HTML and JavaScript,which are supported by a variety of web browsers. Web applications can be considered as a specifific variant of client–server software where the client software is downloaded to the client machine when visiting the relevant web page, using standard procedures such as HTTP. The Client web software updates may happen each time the web page is visited. During the session, the web browser interprets and displays the pages, and acts as the universal client for any web application. The use of web application frameworks can often reduce the number of errors in a program, both by making the code simpler, and by allowing one team to concentrate on the framework while another focuses on a specifified use case. In applications which are exposed to constant hacking attempts on the Internet, security-related problems can be caused by errors in the program.

Frameworks can also promote the use of best practices such as GET after POST. There are some who view a web application as a two-tier architecture. This can be a "smart" client that performs all the work and queries a "dumb" server, or a "dumb" client that relies on a "smart" server. The client would handle the presentation tier, the server would have the database (storage tier), and the business logic (application tier) would be on one of them or on both. While this increases the scalability of the applications and separates the display and the database, it still doesn"t allow for true specialization of layers, so most applications will outgrow this model. An emerging strategy for application software companies is to provide web access to software previously distributed as local applications. Depending on the type of application, it may require the development of an entirely different browser-based interface, or merely adapting an existing application to use different presentation technology. These programs allow the user to pay a monthly or yearly fee for use of a software application without having to install it on a local hard drive. A company which follows this strategy is known as an application service provider (ASP), and ASPs are currently receiving much attention in the software industry.

Security breaches on these kinds of applications are a major concern because it can involve both enterprise information and private customer data. Protecting these assets is an important part of any web application and there are some key operational areas that must be included in the development process. This includes processes for authentication, authorization, asset handling, input, and logging and auditing. Building security into the applications from the beginning can be more effective and less disruptive in the long run.

Web design

It is encompasses many different skills and disciplines in the production and maintenance of websites. The different areas of web design include web graphic design; interface design; authoring, including standardized code and proprietary software; user experience design; and

search engine optimization. The term web design is normally used to describe the design process relating to the front-end (client side) design of a website including writing mark up. Web design partially overlaps web engineering in the broader scope of web development. Web designers are expected to have an awareness of usability and if their role involves creating mark up then they are also expected to be up to date with web accessibility guidelines. Web design partially overlaps web engineering in the broader scope of web development.

Departments and services offered

Compsoft Technologies plays an essential role as an institute, the level of education, development of student's skills are based on their trainers. If you do not have a good mentor then you may lag in many things from others and that is why we at Compsoft Technologies gives you the facility of skilled employees so that you do not feel unsecured about the academics. Personality development and academic status are some of those things which lie on mentor's hands. If you are trained well then you can do well in your future and knowing its importance of Compsoft Technologies always tries to give you the best.

They have a great team of skilled mentors who are always ready to direct their trainees in the best possible way they can and to ensure the skills of mentors we held many skill development programs as well so that each and every mentor can develop their own skills with the demands of the companies so that they can prepare a complete packaged trainee.

Services provided by Compsoft Technologies.

• Core Java and Advanced Java

• Web services and development

• Dot Net Framework

• Python

• Selenium Testing

• Conference / Event Management Service

• Academic Project Guidance

• On The Job Training

• Software Training

CHAPTER 3

INTRODUCTION

3. <u>INTRODUCTION</u>

Introduction to ML

- Machine learning is programming computers to optimize a performance criterion using example data or past experience . We have a model defined up to some parameters, and learning is the execution of a computer program to optimize the parameters of the model using the training data or past experience. The model may be predictive to make predictions in the future, or descriptive to gain knowledge from data.

- The field of study known as machine learning is concerned with the question of how to construct computer programs that automatically improve with experience

- Machine Learning is used anywhere from automating mundane tasks to offering intelligent insights, industries in every sector try to benefit from it. You may already be using a device that utilizes it. For example, a wearable fitness tracker like Fitbit, or an intelligent home assistant like Google Home. But there are much more examples of ML in use.

- Prediction — Machine learning can also be used in the prediction systems. Considering the loan example, to compute the probability of a fault, the system will need to classify the available data in groups

- Image recognition — Machine learning can be used for face detection in an image as well. There is a separate category for each person in a database of several people

- Medical diagnoses — ML is trained to recognize cancerous tissues and many more.

Problem Statement

Identifying the car Number using pictures .License plate recognition (LPR), or automatic number plate recognition (ANPR), is the use of video captured images from traffic surveillance cameras for the automatic identification of a vehicle through its license plate. LPR attempts to make the reading automatic by processing sets of images captured by cameras, often setup at fixed locations on roads and at parking lot entrances.

CHAPTER 4

SYSTEM ANALYSIS

4. <u>SYSTEM ANALYSIS</u>

◆ **Existing System** With a smart parking system in place: before you leave your home,you check your parking app to be guided to the best available spot. Or you head towards the city center, you see dynamic smart parking signage and it guides you turn by turn to the best available spot

◆ **proposed System** An IoT cloud-based system, on the other hand, allows these devices to be connected and the data to be centralized. The data are then analyzed using big data in order to calculate the availability of on-street parking spaces or spaces in public and private parking facilities.

◆ **Objective of the System** If we want even more accurate information about how likely we are to find an on-street parking space, we don't always have to use an app. Functionalities already available on our devices such as Google Maps provide us with real-time traffic data and the likelihood of parking in these areas. This service and other maps update the information the closer we get to our selected destination.

CHAPTER 5

REQUIREMENT ANALYSIS

5. <u>REQUIREMENT ANALYSIS</u>

Hardware Requirement Specification

Min 10 GB HDD

RAM 512 MB or Higher

2.4 GHz or faster Processor

Software Requirement Specification

Python

Machine learning

Pandas

Numpy

Keras

Tensorflow

CHAPTER 6

DESIGN ANALYSIS

6. DESImGN & ANALYSIS

1. ***Find all the parking spaces:*** In a given space that the camera covers, it is crucial to know which of the spaces are designated parking spaces. Most of the parking lots specify parking area by drawing white boxes or white lines as shown in the images below. For us, it might be a simple task to identify a parking space, but it is a huge task for a computer to be able to look at those images as say how many parking spaces there are and draw a bod around the parking spaces.

2. ***Find if a parking space is available or occupied:*** Once we know which all are parking spaces, we can then proceed to step two which is detecting if a parking space is occupied or is available. As with the above step, it is easy for us to look at a parking space and say if it occupied or not.

3. For this experiment, We took the annotations from the PKLot dataset itself to get the coordinates of the parking spaces for a given image. All the input images I have used so far are from the same dataset, and so they come along with the annotation for the parking spaces.

CHAPTER 7

IMPLEMENTATION

7. <u>IMPLEMENTATION</u>

Implementation is the stage where the theoretical design is turned into a working system. The most crucial stage in achieving a new successful system and in giving confidence on the new system for the users that it will work efficiently and effectively.

The system can be implemented only after thorough testing is done and if it is found to work according to the specification. It involves careful planning, investigation of the current system and it constraints on implementation, design of methods to achieve the change over and an evaluation of change over methods a part from planning.

Two major tasks of preparing the implementation are education and training of the users and testing of the system. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

The implementation phase comprises of several activities. The required hardware and software acquisition is carried out. The system may require some software to be developed. For this, programs are written and tested. The user then changes over to his new fully tested system and the old system is discontinued.

TESTING

The testing phase is an important part of software development. It is the Information zed system will help in automate process of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. Software testing is carried out in three steps:
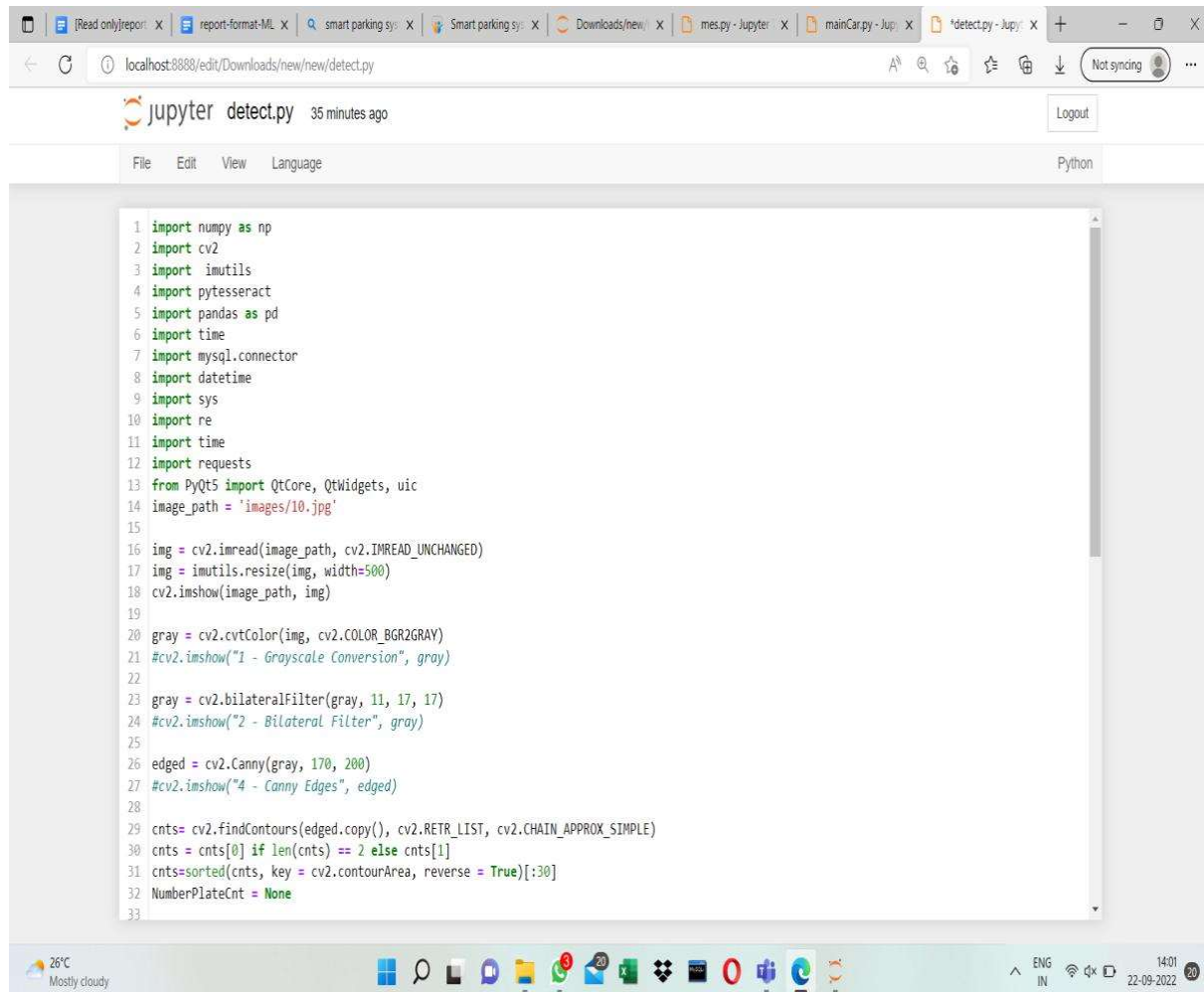
1. The first includes unit testing, where in each module is tested to provide its correctness, validity and also determine any missing operations and to verify whether the objectives have been met. Errors are noted down and corrected immediately.

2. Unit testing is the important and major part of the project. So errors are rectified easily in particular module and program clarity is increased. In this project entire system is divided into several modules and is developed individually. So unit testing is conducted to individual modules.

3. The second step includes Integration testing. It need not be the case, the software whose modules when run individually and showing perfect results, will also show perfect results when run as a whole.

CHAPTER 8

SNAPSHOTS

8. SNAPSHOTS

Jupyter detect.py 35 minutes ago

File Edit View Language

```python
for c in cnts:
        peri = cv2.arcLength(c, True)
        approx = cv2.approxPolyDP(c, 0.02 * peri, True)
        if len(approx) == 4:
                NumberPlateCnt = approx
                break

# Masking the part other than the number plate
mask = np.zeros(gray.shape,np.uint8)
new_image = cv2.drawContours(mask,[NumberPlateCnt],0,255,-1)
new_image = cv2.bitwise_and(img,img,mask=mask)
cv2.namedWindow("Final_image",cv2.WINDOW_NORMAL)
cv2.imshow("Final_image",new_image)

# Configuration for tesseract
config = ('-l eng --oem 1 --psm 3')

# Run tesseract OCR on image
text = str(pytesseract.image_to_string(new_image, config=config))

#Data is stored in CSV file
raw_data = {'date': [time.asctime( time.localtime(time.time()) )],
        'v_number': [text]}

df = pd.DataFrame(raw_data, columns = ['date', 'v_number'])
df.to_csv('data.csv')

# Print recognized text
print(text)
cv2.waitKey(0)
```

CHAPTER 9

CONCLUTION

9. <u>CONCLUTION</u>

The package was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project:

❖ Automation of the entire system improves the efficiency

❖ It provides a friendly graphical user interface which proves to be better when compared to the existing system.

❖ It gives appropriate access to the authorized users depending on their permissions.

❖ It effectively overcomes the delay in communications.

❖ Updating of information becomes so easier

❖ System security, data security and reliability are the striking features.

❖ The System has adequate scope for modification in future if it is necessary.

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