Emerging Technologies

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Sponsorship Letter

To,
The Principal,
Late G.N Sapkal,
Nashik.

Subject: Sponsorship For The Project on "Sign Language Translation".

This is to inform you that we here by sponsor candidature of below listed students. We are pleased to accept Project named "**Sign Language Translation**". And provide permission for doing project the period from August 2022 to March 2023.During this period, they will be designated as a "Trainee".

Details and scope of their project will be provided to them first day of training at the company. They will be required to submit a copy of the detailed project report before completion of the training. This training period with our company will entail dealing with important and sensitive information, records and such other matters of the company. They will ,therefore, be required to sign a "Code of Conduct Secrecy Agreement of our company on the first day of training.

Student Details:

1.Sneha Sonawane
2.Sakshi Borgude
3.Aditya Kanawade
4.Sandesh Shardul

Phande

Kanchan Ekhande
CEO
Signature & Designation

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Software & Automation Solutions

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A PRELIMINARY PROJECT REPORT ON

SIGN LANGUAGE TRANSLATOR USING 3D SENSOR

SUBMITTED TOWARDS THE
PARTIAL FULFILLMENT OF THE REQUIREMENTS OF

BACHELOR OF ENGINEERING
(COMPUTER ENGINEERING)

SUBMITTED BY

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UNDER THE GUIDANCE OF

PROF. K. R. PATIL

DEPARTMENT OF COMPUTER ENGINEERING
LATE G. N. SAPKAL COLLEGE OF ENGINEERING ANJANERI,
TRIMBAKESHWAR NASHIK

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
2022-23

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SUBMITTED BY

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Under The Guidance of

Prof. K. R. Patil

DEPARTMENT OF COMPUTER ENGINEERING
Late G. N. Sapkal College of Engineering Anjaneri,
Trimbakeshwar Nashik

SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
2022-23

Late G. N. Sapkal College of Engineering
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422 212

Late G. N. Sapkal College of Engineering
DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the Project Entitled

SIGN LANGUAGE TRANSLATOR USING 3D SENSOR

Submitted by

Sneha Arun Sonawane	Seat No:- B190764273
Sakshi Ananda Borgude	Seat No:- B190764214
Aditya Ramesh Kanawade	Seat No:- B190764238
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It is a bonafide work carried out by Students under the supervision of **Prof. K.R.Patil** and it is submitted towards the partial fulfillment of the requirement of **Bachelor of Engineering** (Computer Engineering) Project.

Prof. K. R. Patil
Internal Guide
Dept. of Computer Engg.

Prof. (Dr) N. R. Wankhade
H.O.D
Dept. of Computer Engg.

Prof (Dr) S. B. Bagal
Principal
Sapkal college of Engineering

ABSTRACT

Every day, millions of deaf people use sign language to express and convey their thoughts and feelings. Sign language is an incredibly useful form of communication for people who have difficulty in hearing and speaking. Through this project, deaf people are empowered and inspired to make meaningful contributions to society in order to be successfully integrated.

The primary goal of this project is to develop software that is effective at performing speech-to-sign and sign-to-speech functionalities using deep learning and convolutional neural networks in real time. The model accurately recognises the hand gestures using the specifically designed Kinect 360Sensor.

The program's objective is to recognise gestures made by deaf and dumb users and show the relevant text and audio to sighted users, in addition to simultaneously recording sighted user's audio input and showing the corresponding gestures to the impaired user.

Keywords: Deep Learning (DL), Convolutional Neural Network (CNN), Kinect Sensor

ACKNOWLEDGEMENT

It is a great pleasure in presenting the preliminary project report on **"Sign Language Translator Using 3D Sensor"**.

With a deep sense of gratitude, we would like to thank all the people who have lit our path with their kind guidance. At the outset, I would like to thank my project guide **Prof. K.R. Patil** for her valuable and skilful guidance, assessment and suggestions from time to time improved the quality of work in all respects.

We are also grateful to **Prof. (Dr). N. R. Wankhade,** Head of Computer Engineering Department for his timely guidance, inspiration and administrative support without which my work would not have been completed.

I am also thankful to the all-staff members of the Computer Engineering Department and Librarian, SKH College of engineering, Anjaneri, Nashik. Also, I would like to thank my colleagues and friends who helped me directly and indirectly to complete this Project.

Sneha Sonawane
Sakshi Borgude
Aditya kanawade
Sandesh Shardul
(B.E. Computer Engg.)

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CHAPTER 1
INTRODUCTION

1.1 OVERVIEW

Humans have been endowed by nature with the voice capability that allows them to interact and communicate with each other. The spoken language becomes one of the main attributes of humanity. Unfortunately, not everybody possesses this capability due to the lack of sense, i.e., hearing or speaking. Loss of hearing or speech can cause people to become isolated and lonely, having a tremendous effect on both their social and working life. To reduce this gap between the normal people and the impaired ones Sign language is introduced.

Sign Language is the well-structured code gesture language, every gesture has meaning assigned to it. This is the most important communication way between impaired community and normal person. It is observed that ordinary people do not understand the sign language. So, to overcome this problem and make the communication possible this system is introduced. When the impaired person wants to communicate with ordinary person then at that time, he performs action in front of Kinect camera. The camera will recognize the actions being performed by the user, and gives the skeleton of human body. Kinect camera gives accuracy while performing actions, draws the skeleton of human body when user stand in front of Kinect sensor. These actions are then compared with actions stored in dictionary. A dictionary is maintained where all the actions and related text are stored.

If the match is found then appropriate text is displayed on the screen. On the other side if the ordinary person wants to communicate then he will give audio input. This input is captured through Kinect sensor. Then the output

will be displayed in the form of animated images and text. When the impaired user performs some actions which are not stored in the dictionary, then at that time we can dynamically add that action into the dictionary. So, there is no need to change in source code every time. Also, dynamic actions get stored along with its corresponding values in the dictionary.

Thus, in the following way an interactive communication will take place. This system works with two-way communication. With this system impaired person can communicate with ordinary person and vice versa. It means it recognizes the actions performed by impaired people and converts into language understood by ordinary persons and vice versa. This system uses special hardware and maps that with software to produce the required result.

1.2 MOTIVATION OF THE PROJECT

Communication is most important part of daily life. Through communication one can interact with the society. Communication with family, friends, at work and public place is vital. But if someone lack with this ability then it becomes serious issue.

Deaf and Dumb people use sign language for communication. It is difficult for normal user to understand the sign actions, so communication gap is increased. So, in this situation a mediator is required to translate the languages. It becomes difficult to find a well experienced and educated translator for sign language every time and everywhere when needed which results in lack of communication between the ordinary and impaired people. So, it becomes necessary to have such system which will help for impaired person to convey their messages in society. So, there is a need of a System which acts as a mediator between impaired and normal people.

- The need of such system is in government sector where either the customer or the client may be impaired and wants to communicate with each other.
- In Hospitals where the impaired patient wants to communicate with the doc-tor regarding the disease.
- In Multinational companies this system is most useful where the impaired employee will get the platform to showcase his talent. For long distance education courses and to provide the Education material, this system can be useful. Thus, the need of this Project is to make the communication easy for impaired people and taking this project to the level of serving to the society

1.3 SCOPE OF PROJECT

This is the enhanced controller in which it controls all the operations using face and hand-based gesture recognition. The detection and extraction of the face and hand characteristics during the image stream acquisition, which is obtained from an integrated webcam. This face and gesture-based computer controller is efficient and it can assist in minimizing human efforts.

- This automated system is to get better experience of using media player.
- This automated system is to get better experience of using keyboard.
- This automated system is to get better experience of using mouse cursor.
- It provides a quicker way of operation by capturing the images using integrated webcam and automating it.
- This project is helpful to automate the system by controlling operations of media player by face detection and hand recognition through real time capturing image features thorough webcam.

1.4 PROBLEM DEFINITION AND OBJECTIVES

Communication with deaf and dumb people is based on the sign language. Sign Language is the standard language designed particularly for impaired people. Basically, this is based on movement of hands. It has been observed that they find it very difficult to interact with the society, because not everyone in society is well familiar with the sign language also normal people find it difficult to understand their sign language. So, to bridge the gap between normal people and impaired people this system is proposed. In the early days this gap is bridge by the mediator. It is not necessary that every time the mediator will be available 24X7. So, to solve this problem and make case of the new technology the proposed system is developed.

The proposed System act as the mediator between impaired people and normal people.

In Mode 1 the system is initiated by the impaired person. When impaired person wants to communicate with normal person then he gives the input as sign to System through Kinect camera. These actions are captured by the Kinect camera. System performs Processing on captured sign and produces text and audio as output. That is understood by normal people.

In mode 2 the system is initiated by the normal person. When normal person wants to communicate with impaired person then he gives input as audio. This input is accepted by the microphone which is fitted on the base of Kinect camera. System performs processing on audio and converts it into text. Based on this text pattern matching is done. Once the match is found then the relevant images are displayed.

CHAPTER 2
LITERATURE SURVEY

In [1] a technique is proposed for the recognition of thirty-six static alphabets of PSL using bare hands. The data set is obtained from the sign language videos. At a later step, four vision-based features are extracted i.e., local binary patterns, a histogram of oriented gradients, edge-oriented histogram, and speeded up robust features. Here three kernel functions are utilized for each feature set classification by which the accuracy of each feature is only 15GESCO, Department of Computer Engineering 2022 extremal regions (MSER) features instead of SURF will increase accuracy.

Also, there is a lot of room to further improve the dataset. Furthermore, [2] gives a introduction of general framework in which the internal representations computed by a deep neural network are optimally combined by means of Multiple Kernel Learning. The algorithm can be made further efficient with the deep learning models, and correctly classify the result to increase accuracy furthermore. The proposed technique [3] is validated over the data set of signs, taken through the help of seven native signers. The performance of the proposed technique is evaluated by precision, recall, accuracy, and f-measure, while it is elaborated through the classification matrix, tabular, and graph representations. The proposed technique has achieved considerably good categorization results but it also consumes lot of computational resources and time. In [4] the proposed resolving

technique can outperform the other methods by accurately specify the position of the hands and the head.

The developed system does not construct a 3D model of hand posture that need two cameras and a sensitive calculation to weight the two views from both cameras. Several reviews on Human Gesture Recognition have been presented before in [5] and [6]. They mostly utilized 2D information and only a minority of them worked with depth data (3D).

CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM ARCHITECTURE

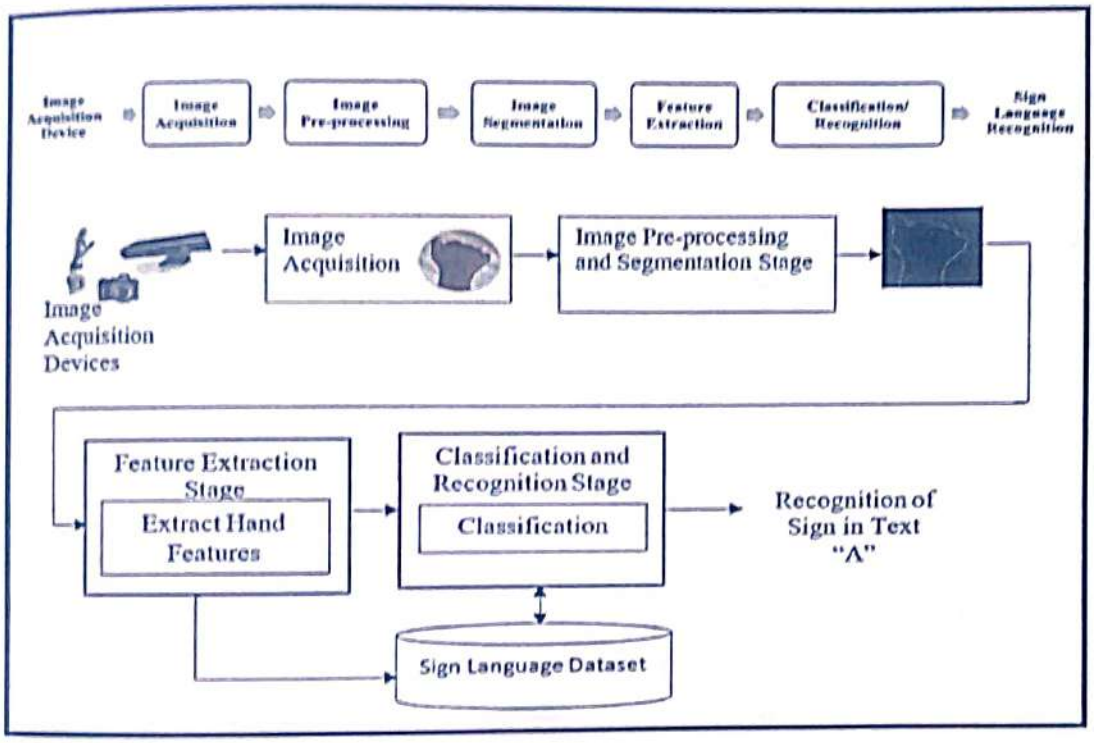
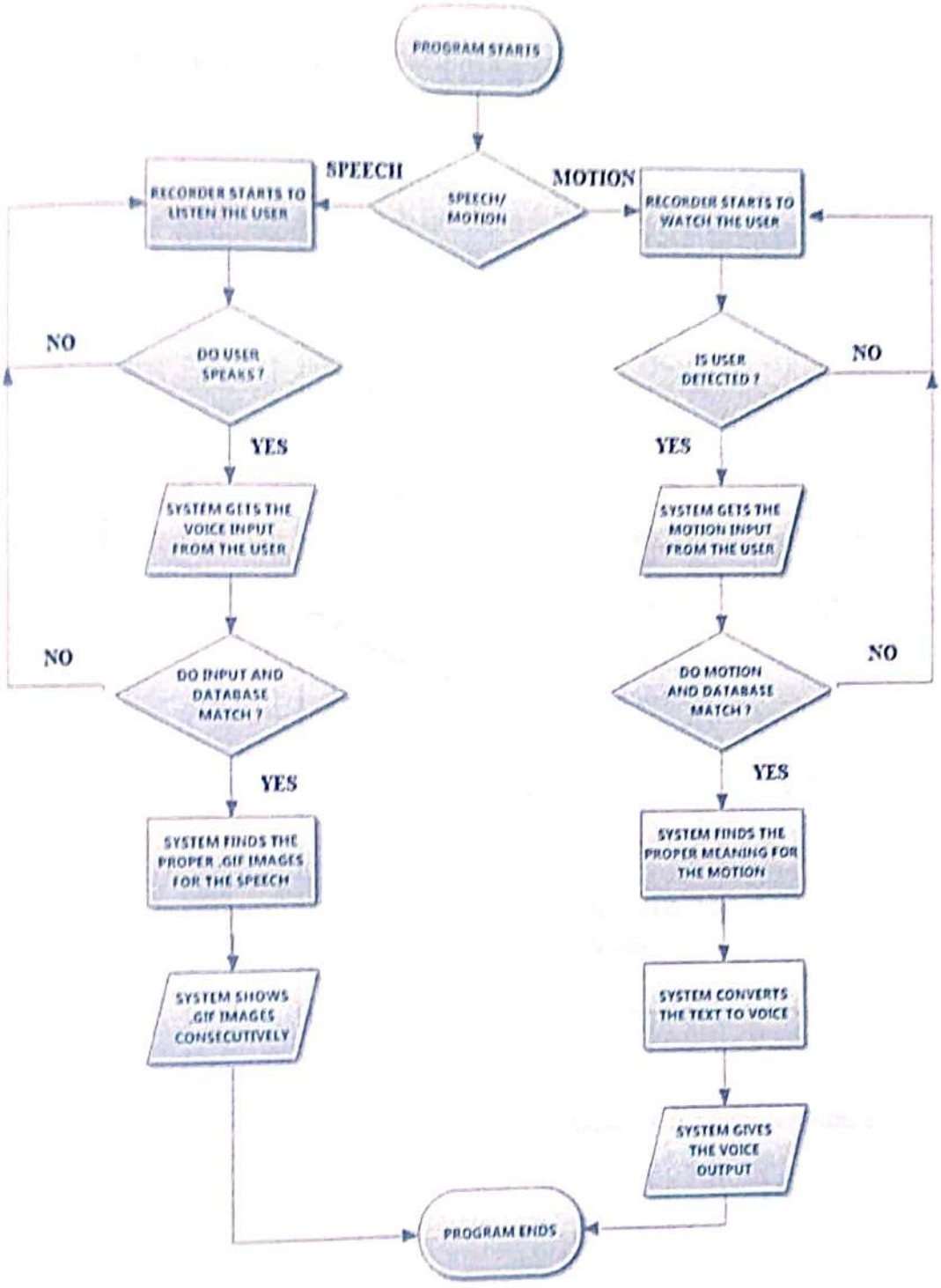


fig. system architecture for sign language translator

4.3 FLOWCHART FOR PROPOSED SYSTEM



– fig. flowchart for sign language translator

CHAPTER 9

CONCLUSIONS

9.1 CONCLUSION

The system's functional and non-functional requirements are identified and validated as well the goals and objectives of the system are defined. Through the implementation of NLP and the use of Kinect sensor, the model would be effectively able to translate sign languages into speech in real-time. At the same, the model enables us to have both-way communication between an ordinary user and impaired person. Hence, the accuracy and performance is be increased in the real-time scenario.

9.2 FUTURE SCOPE

The proposed interactive system can handle different types of words. Also, it is suitable for dynamic signs. This system helps for easier interaction and communication with impaired people. It acts as a mediator between impaired users and ordinary users. They can easily convey their messages to each other through this system. It can be system can be enhanced to recognize continuous sentences Examples: Stories, and News.

REFERENCES

[1] Farman Shah, Muhammad Saqalain Shah,Waseem Akram, Awais Manzzor,and Diaa Salama Abdeminaam, "Sign Language Recognition Using Multiple Kernel Learning", IEEE Publication, 2021.

Ivano Lauriola, Claudio Gallicchio,Fabio Aiolli Enhancing deep neural networks via multiple kernel learning, ScienceDirect 2020.

Syed Muhammad Saqlain Shah, Nusnain Abbas Naqvi,Javed I Khan,Muhammad Ramzan, Pakistan sign language categorization using statistical features and support vector machines, IEEE publication 2018

Nada B. Ibrahim, Mazen M. Selim,Hala H. Zayed An automatic Arabic sign language recognition system, ScienceDirect 2018

Pavlovic, V.I. and Sharma, R. and Huang, T.S., "Vision-Based Gesture Recognition: A Review", Pattern Analysis and Machine Intelligence, IEEE Transactions on, 1997.

Wu, Ying and Huang, Thomas S.," Visual interpretation of hand gestures for human-computer interaction: a review", Proceedings of the International Gesture Workshop on Gesture-Based Communication in Human-Computer Interaction, 1999

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To,
Sakshi Borgude

Subject: Publication of paper at International Journal of Science & Engineering Development Research.

Dear Author,

With Greetings we are informing you that your paper has been successfully published in the International Journal of Science & Engineering Development Research (ISSN: 2455-2631). Thank you very much for your patience and cooperation during the submission of paper to final publication Process. It gives me immense pleasure to send the certificate of publication in our Journal. Following are the details regarding the published paper.

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Title of Paper	:	Sign Language Translation Using 3D Sensor
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Authors	:	Sakshi Borgude, Aditya Kanawade, Sandesh Shardul, Sneha Sonawane

Thank you very much for publishing your article in IJSDR. We would appreciate if you continue your support and keep sharing your knowledge by writing for our journal IJSDR.

Indexing Patner

Editor In Chief
International Journal of Science & Engineering Development Research
(ISSN: 2455-2631)

INTERNSHIP REPORT

"YBI foundation"

SUBMITTED BY

SAWANT ANURAG RAMKRISHNA

Seat No. T190763062

GUIDE PROF: PROF S. G. Patill

DEPARTMENT OF E &TC ENGINEERING

Kct's Late G.N. Sapkal College of Engineering ,Anjaneri, Nashik 422213 Academic year 2022-2023

CERTIFICATE

This is to certify that **M.r. SAWANT ANURAG RAMKRISHNA** (Exam seat number T190763062) of Third Year **Electronics & Telecommunications Engineering)** ***LATE G. N. SAPKAL OF COLLEGE OF ENNGINEERING NASHIK.*** has successfully completed Internship in "YBI foundation" to our satisfaction and submitted the same during the academic year 2022-2023 towards the partial fulfillment of degree of Bachelor of Engineering.

Prof. S. G. Patil
College Internship Coordinator.

Prof. S. B. Borse
Head of Department.

Prof.Dr.S.B.Bagal
Principal.

G. N. Sapkal College of Engineering
Anjaneri
Nashik
422 212

Certificate of Completion

ANURAG SAWANT

has successfully completed one month internship in Fundamental of Machine Learning with Python for Business & Data Analytics at YBI Foundation from 3rd April'23 to 2nd May'23.

Wednesday, May 03 2023
14364000003027696

YBI Foundation

www.ybifoundation.org (+91) 966 798 7711 support@ybifoundation.org

Certificates of Internship

Date : 3th May, 2023

Internship Letter

This is to ensure that Mr. Sawant Anurag Ramkrishna has successfully completed one-month internship in Fundamental of Machine Learning with Python for Business & Data Analytics at YBI Foundation from 3rd April'23 to 2nd May'23.

During the internship he showed great abilities with a self-persuaded to learn new thinks. His presentation surpassed assumption and had the option to finish the tasks effectively on schedule.

We wish him all the best for future endeavours.

DR. ALOK YADAV
Program Director

ACKNOWLEDGEMENT

First I would like to thank **Dr. Alok Yadav** Founder & Director of **YBI Foundation** for giving me the opportunity to do an Internship within the Organization.

I also would like to thank to all people that worked along with me, with their patience and openness they created an enjoyable working environment.

It is indeed with a great of pleasure and immense sense of gratitude that I acknowledge the help of these individuals. I am highly indebted to our principal Prof. **(Dr). S. B. Bagal** for the facilities provided to accomplish this Internship. I would like to thank my head of E & TC Department **Prof. S. B. Borse** Sir for his constructive critism through my Internship. I would like to thank college Internship coordinator **Prof. S. G. Patil** Sir Internship coordinator department of E & TC Engineering for their support and advices to get and complete Internship in above said organization.

I am extremely great full to my Department staff members and friends who help me in successful completion of this Internship.

SAWANT ANURAG RAMKRISHNA

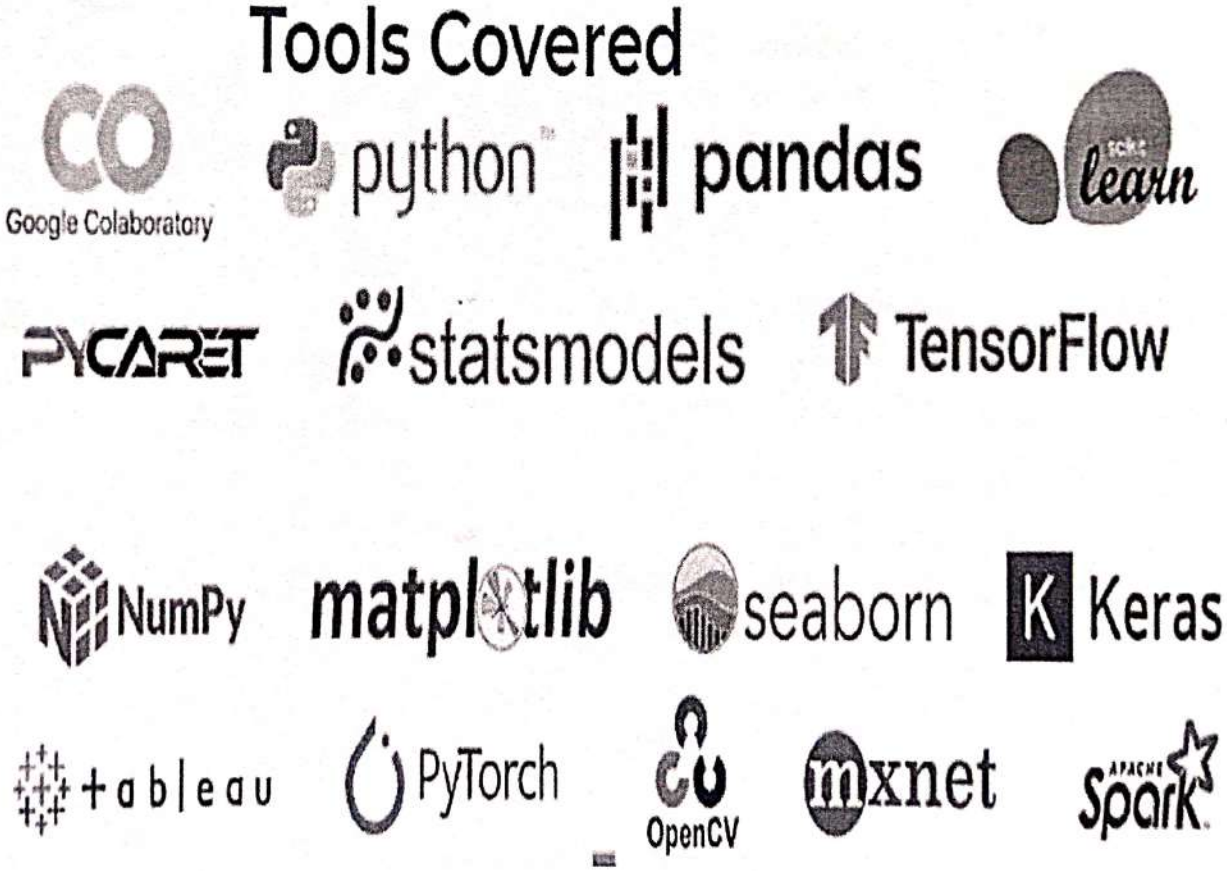
(Exam Seat No.T190763062)

ABSTRACT

Our modern and strong Infrastructure is a strong pillar of our organization which enables us to meet the requirement and standards of the Industry. We have a highly dedicated and enthusiast workforce with skilled professionals who endeavor to raise the Industry standards by running that extra mile which distinguishes us from other. With a modern Infrastructure, it becomes convenient for us to meet the requirements of the clients. We keep in mind the safety standards in the work place and see to it that our employees work in the safest possible environment.

Introduction

YBI Foundation is a Delhi-based not-for-profit edutech company that aims to enable the youth to grow in the world of emerging technologies. They offer a mix of online and offline approaches to bring new skills, education, technologies for students, academicians and practitioners. They believe in the learning anywhere and anytime approach to reach out to learners. The platform provides free online instructor-led classes for students to excel in data science, business analytics, machine learning, cloud computing and big data. They aim to focus on innovation, creativity, technology approach and keep themselves in sync with the present industry requirements. They endeavor to support learners to achieve the highest possible goals in their academics and professions.



Internship Report

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation via the off-side rule.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.

Guido van Rossum began working on Python in the late 1980s as a successor to the ABC programming language and first released it in 1991 as Python 0.9.0. Python 2.0 was released in 2000. Python 3.0, released in 2008, was a major revision not completely backward-compatible with earlier versions. Python 2.7.18, released in 2020, was the last release of Python 2.

What is Python Programming Language?

Python is an object-oriented programming language created by Guido Rossum in 1989. It is ideally designed for rapid prototyping of complex applications. It has interfaces to many OS system calls and libraries and is extensible to C or C++. Many large companies use the Python programming language, including NASA, Google, YouTube, BitTorrent, etc.

"Python is an experiment in how much freedom programmers need. Too much freedom and nobody can read another's code; too little and expressiveness is endangered."

- Guido van Rossum

What I learn in this Python Internship ?

In this Python for beginners tutorial, you will learn Python installation, variables, Data structure, loops, strings, functions, file handling, Python SciPy, Python JSON, Python with MySQL, matrix, Python List, Python Regex, PyTest, PyQt, multithreading, Python interview questions, and many more interesting Python concepts.

Python Programming Characteristics

- It provides rich data types and easier to read syntax than any other programming languages
- It is a platform-independent scripted language with full access to operating system API's
- Compared to other programming languages, it allows more run-time flexibility

- It includes the basic text manipulation facilities of Perl and Awk
- A module in Python may have one or more classes and free functions
- Libraries in Pythons are cross-platform compatible with Linux, Macintosh, and Windows
- For building large applications, Python can be compiled to byte-code
- Python supports functional and structured programming as well as OOP
- It supports interactive mode that allows interacting Testing and debugging of snippets of code
- In Python, since there is no compilation step, editing, debugging, and testing are fast.

Applications of Python Programming Language

- Program video games
- Build Artificial Intelligence algorithms
- Program various scientific programs such as statistical models

Python vs JAVA vs Perl vs TCL vs PHP vs RUBY vs C++ vs JavaScript

Python is one of the most popular programming languages. Currently, each of the following six languages are being used by programmers for developing both desktop and web applications. That is why, it is important for programmers to compare Python with JAVA, Perl , TCL, PHP, RUBY, C++, and JavaScript to pick the right language

```
import turtle as t
playerAscore=0
playerBscore=0

#create a window and declare a variable called window and call the screen()
window=t.Screen()
window.title("The Pong Game")
window.bgcolor("green")
window.setup(width=800,height=600)
window.tracer(0)

#Creating the left paddle
leftpaddle=t.Turtle()
leftpaddle.speed(0)
leftpaddle.shape("square")
leftpaddle.color("white")
leftpaddle.shapesize(stretch_wid=5,stretch_len=1)
leftpaddle.penup()
leftpaddle.goto(-350,0)

#Creating the right paddle
rightpaddle=t.Turtle()
rightpaddle.speed(0)
rightpaddle.shape("square")
rightpaddle.color("white")
rightpaddle.shapesize(stretch_wid=5,stretch_len=1)
rightpaddle.penup()
rightpaddle.goto(-350,0)

#Code for creating the ball
ball=t.Turtle()
ball.speed(0)
ball.shape("circle")
ball.color("red")
ball.penup()
ball.goto(5,5)
ballxdirection=0.2
ballydirection=0.2
```

```
#Code for creating pen for scorecard update
pen=t.Turtle()
pen.speed(0)
pen.color("Blue")
pen.penup()
pen.hideturtle()
pen.goto(0,260)
pen.write("score",align="center",font=('Arial',24,'normal'))

#code for moving the leftpaddle
def leftpaddleup():
    y=leftpaddle.ycor()
    y=y+90
    leftpaddle.sety(y)

def leftpaddledown():
    y=leftpaddle.ycor()
    y=y+90
    leftpaddle.sety(y)

#code for moving the rightpaddle
def rightpaddleup():
    y=rightpaddle.ycor()
    y=y+90
    rightpaddle.sety(y)

def rightpaddledown():
    y=rightpaddle.ycor()
    y=y+90
    rightpaddle.sety(y)

#Assign keys to play
window.listen()
window.onkeypress(leftpaddleup,'w')
window.onkeypress(leftpaddledown,'s')
window.onkeypress(rightpaddleup,'Up')
window.onkeypress(rightpaddledown,'Down')
```

```
while True:
    window.update()

    #moving the ball
    ball.setx(ball.xcor()+ballxdirection)
    ball.sety(ball.ycor()+ballxdirection)

    #border set up
    if ball.ycor()>29[redacted]
        ball.sety(290)
        ballydirection=ballydirection*-1
    if ball.ycor()<-290:
        ball.sety(-290)
        ballydirection=ballydirection*-1

    if ball.xcor() > 390:
        ball.goto(0,0)
        ball_dx = ball_dx * -1
        player_a_score = player_a_score + 1
        pen.clear()
        pen.write("Player A: {}                    Player B: {} ".format(pl
        os.system("afplay wallhit.wav&")


    if(ball.xcor()) < -390: # Left width paddle Border
        ball.goto(0,0)
        ball_dx = ball_dx * -1
        player_b_score = player_b_score + 1
        pen.clear()
        pen.write("Player A: {}                    Player B: {} ".format(pl
        os.system("afplay wallhit.wav&")

     # Handling the collisions with paddles.

    if(ball.xcor() > 348) and (ball.xcor() < 350) and (ball.ycor() < right
        ball.setx(340)
        ball_dx = ball_dx * -1
        os.system("afplay paddle.wav&")

    if(ball.xcor() < -340) and (ball.xcor() > -350) and (ball.ycor() < left
        ball.setx(-340)
        ball_dx = ball_dx * -1
        os.system("afplay paddle.wav&")
```

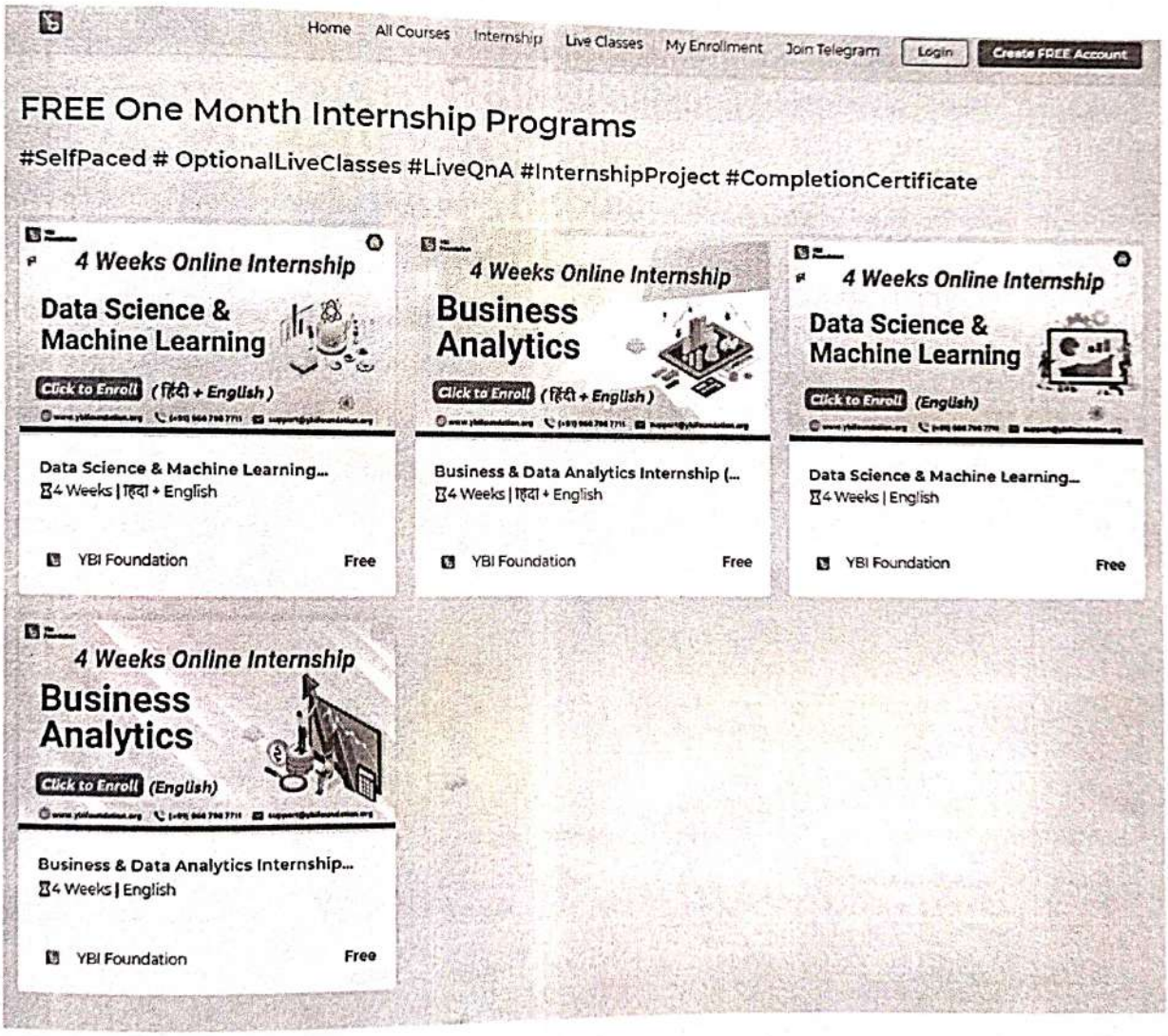
```
import os
import time

board = [' ',' ',' ',' ',' ',' ',' ',' ',' ',' ']
player = 1

########Win Flags##########
Win = 1
Draw = -1
Running = 0
Stop = 1
###########################
Game = Running
Mark = 'X'

#This Function Draws Game Board
def DrawBoard():
    print(" %c | %c | %c " % (board[1],board[2],board[3]))
    print("___|___|___")
    print(" %c | %c | %c " % (board[4],board[5],board[6]))
    print("___|___|___")
    print(" %c | %c | %c " % (board[7],board[8],board[9]))
    print("   |   |   ")

#This Function Checks position is empty or not
def CheckPosition(x):
    if(board[x] == ' '):
        return True
    else:
        return False

#This Function Checks player has won or not
def CheckWin():
    global Game
    #Horizontal winning condition
    if(board[1] == board[2] and board[2] == board[3] and board[1] != ' '):
        Game = Win
    elif(board[4] == board[5] and board[5] == board[6] and board[4] != ' '):
        Game = Win
    elif(board[7] == board[8] and board[8] == board[9] and board[7] != ' '):
        Game = Win
    #Vertical Winning Condition
    elif(board[1] == board[4] and board[4] == board[7] and board[1] != ' '):
        Game = Win
    elif(board[2] == board[5] and board[5] == board[8] and board[2] != ' '):
        Game = Win
    elif(board[3] == board[6] and board[6] == board[9] and board[3] != ' '):
        Game=Win
    #Diagonal Winning Condition
    elif(board[1] == board[5] and board[5] == board[9] and board[5] != ' '):
        Game = Win
    elif(board[3] == board[5] and board[5] == board[7] and board[5] != ' '):
        Game=Win
    #Match Tie or Draw Condition
    elif(board[1]!=' ' and board[2]!=' ' and board[3]!=' ' and board[4]!=' ' and board
        Game=Draw
    else:
        Game=Running

print("Tic-Tac-Toe Game Designed By Sourabh Somani")
print("Player 1 [X] --- Player 2 [O]\n")
print()
print()
```

```
def CheckWin():
    global Game
    #Horizontal Winning Condition
    if(board[1] == board[2] and board[2] == board[3] and board[1] != ' '):
        Game = Win
    elif(board[4] == board[5] and board[5] == board[6] and board[4] != ' '):
        Game = Win
    elif(board[7] == board[8] and board[8] == board[9] and board[7] != ' '):
        Game = Win
    #Vertical Winning Condition
    elif(board[1] == board[4] and board[4] == board[7] and board[1] != ' '):
        Game = Win
    elif(board[2] == board[5] and board[5] == board[8] and board[2] != ' '):
        Game = Win
    elif(board[3] == board[6] and board[6] == board[9] and board[3] != ' '):
        Game=Win
    #Diagonal Winning Condition
    elif(board[1] == board[5] and board[5] == board[9] and board[5] != ' '):
        Game = Win
    elif(board[3] == board[5] and board[5] == board[7] and board[5] != ' '):
        Game=Win
    #Match Tie or Draw Condition
    elif(board[1]!=' ' and board[2]!=' ' and board[3]!=' ' and board[4]!=' ' and board
        Game=Draw
    else:
        Game=Running

print("Tic-Tac-Toe Game Designed By Sourabh Somani")
print("Player 1 [X] --- Player 2 [O]\n")
print()
print()
print("Please Wait...")
time.sleep(3)
while(Game == Running):
    os.system('cls')
    DrawBoard()
    if(player % 2 != 0):
        print("Player 1's chance")
        Mark = 'X'
    else:
        print("Player 2's chance")
        Mark = 'O'
    choice = int(input("Enter the position between [1-
9] where you want to mark : "))
    if(CheckPosition(choice)):
        board[choice] = Mark
        player+=1
        CheckWin()

os.system('cls')
DrawBoard()
if(Game==Draw):
    print("Game Draw")
elif(Game==Win):
    player-=1
    if(player%2!=0):
        print("Player 1 Won")
    else:
        print("Player 2 Won")
```

Our service

YBI Foundation is a Delhi-based not-for-profit edutech company that aims to enable the youth to grow in the world of emerging technologies. We offer a mix of online and offline approaches to bring new skills, education, technologies for students, academicians and practitioners. They believe in the learning anywhere and anytime approach to reach out to learners. The platform provides free online instructor-led classes for students to excel in data science, business analytics, machine learning, cloud computing and big data. They aim to focus on innovation, creativity, technology approach and keep themselves in sync with the present industry requirements. They endeavor to support learners to achieve the highest possible goals in their academics and professions.

YBI Foundation offers Free programs, dual internship program, full stack dual certificate program and guaranteed placement.



Conclusion

YBI Foundation specializes in professional training & coaching, primary/secondary education, education management. YBI Foundation provide internship, live classes. And Web Development Services, Graphics and Web Designing, Website and Apps maintenance. We give innovative idea and modern.

Reference

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