Project Proposal

GestureSlide Navigator

Supervisor : Prof. Hasan Raza

By

Amina Ateeq **Roll No: 050015**

Ayesha Rasheed **Roll No: 049948**

Bachelor of Science in Information Technology (2020-2024)

SCOPE DOCUMENT REVSION HISTORY

NO.	Comment	Action

Date: **Supervisor Signature:**

Table of Contents

Project Category: (Select all the major domains of proposed project**)**

- ○ A-Desktop Application/Information System
- ● B-Web Application/Web Application based Information System
- ● C-Problem Solving and Artificial Intelligence
- ○ D-Simulation and Modeling
- ○ E- Smartphone Application
- ○ F-Smartphone Game
- ○ G- Networks
- ● H- Image Processing
- ○ Other (specify category)

Abstract

This machine learning project introduces an innovative approach to redefine user interaction with PowerPoint presentations through real-time hand gesture recognition. The system employs computer vision techniques to detect and interpret hand movements captured by a webcam, providing users with a hands-free interface for controlling PowerPoint slides. The primary objective is to facilitate navigation between PowerPoint slides in preview mode.

Introduction

Introducing "GestureSlide Navigator," an innovative web-based project redefining how we interact with digital content. This unique web application gives the power of hand gestures to revolutionize the control of PowerPoint slides.

In the world of digital communication, our project breaks traditional barriers by enabling users to interact with their presentations in a more natural and dynamic way. By leveraging hand gestures, "GestureSlide Navigator" project marks a significant step in enhancing user engagement and transforming the presentation experience into something intuitive, efficient and user-friendly approach for both presenters and audiences alike.

Problem Statement

In traditional presentation settings, controlling PowerPoint slides often relies on conventional input devices like mice or keyboards, limiting presenter mobility and hindering natural interaction with the content. This creates disconnect between presenters and their audience, diminishing engagement and impacting the effectiveness of communication.

Existing solutions do not effectively address the need for a more intuitive and dynamic method of controlling PowerPoint presentations. While some gesture recognition systems exist, they often lack accuracy and reliability, leading to frustration and inefficiency during presentations.

Problem Solution for Proposed System

The proposed system includes the following solutions:

- Develop a precise gesture recognition algorithm for controlling PowerPoint slides effectively.
- Utilize machine learning to enhance the accuracy and reliability of gesture recognition.
- Conduct thorough testing to ensure reliability and usability across various presentation scenarios.

Project Overview Statement

The project aims to revolutionize the interaction with digital content, specifically PowerPoint presentations, by developing an innovative web-based application called "GestureSlide Navigator". This application gives the power of hand gestures to redefine the control of PowerPoint slides. By seamlessly integrating gesture recognition functionality, the project seeks to enhance user engagement, improve presenter mobility, and foster a more intuitive and dynamic presentation experience. Through precise gesture recognition algorithms and an intuitive user interface, "GestureSlide Navigator" aims to provide users with a seamless and user-friendly interaction with their digital content, ultimately transforming the way presentations are conducted and experienced.

Related System Analysis/Literature Review

In System Analysis we collect data from different documents, manual and sites.

6.1 Table 1- Related System Analysis with proposed project solution

Application Name	Weakness	Proposed Project Solution
GestureSlide Navigator	Previous systems may have struggled with accurately recognizing hand gestures, leading to errors in command execution. Previous systems may have presented a steep learning curve for users unfamiliar with gesture-based interfaces.	The proposed project aims to improve accuracy through the utilization of advanced algorithms and machine learning models. The proposed project focuses on enhancing user experience and usability through intuitive design and user-friendly interfaces.

Pros/Benefits of Proposed System

With this we have multiple advantages like.

1. Enhanced User Engagement
2. Improved Presenter Mobility
3. Intuitive Control
4. Increased Efficiency
5. Accessibility feature
6. Immersive Experience
7. Versatility
8. Reduced Hardware Dependency
9. Enhanced Collaboration

Scope

The demand for a project centered around hand gestures for PowerPoint slides is potentially high in the market. As the need for innovative and hands-free interfaces continues to grow across various industries, such a project aligns with the evolving trends in technology. The project's ability to enhance user experience, particularly through intuitive gesture controls, addresses the increasing demand for convenient and interactive solutions. In a landscape where remote work and virtual interactions are becoming more prevalent, technologies that facilitate engagement without the need for physical input devices are likely to be well-received.

Modules

- Gesture Recognition
- PowerPoint Integration
- Virtual Mouse
- Compatibility
- User Interface (UI)
- Integration with Emerging Technologies
- Documentation and Support

System Administrators

Administrators are people who add or control features for software and are responsible for administering the Visitors

End Users/Customers

The end customer will be the one who visits the website and take privilege from features.

System Limitations/Constraints

- Accuracy and Reliability of Gesture Recognition
- Limited Gesture Vocabulary
- User Fatigue
- Dependency on Camera Quality
- Security Concerns
- Integration Challenges

Software Process Methodology

a) Agile-Scrum Software Model

a. Agile software methodology is a set of repetitive and incremental process models. It is considered to be most flexible and easily maneuverable for restless requirement specifications environments. Unlike other process models where high formality is required and the specifications are expected to be known and verified before the commencement of design, agile models allow the use of increments or possible prototypes that can evolve into a more suited and validated requirements and eventually software application. Pressman (2004) defines it as a development pattern that encourages customer satisfaction and early incremental delivery of operational software; small, highly motivated project teams; informal methods; minimal software engineering work products; and overall development simplicity.

b. There are several evolving agile process models for different design scenarios which are considered flexible, incremental and repetitive in approach.

b) SCRUM Process Model

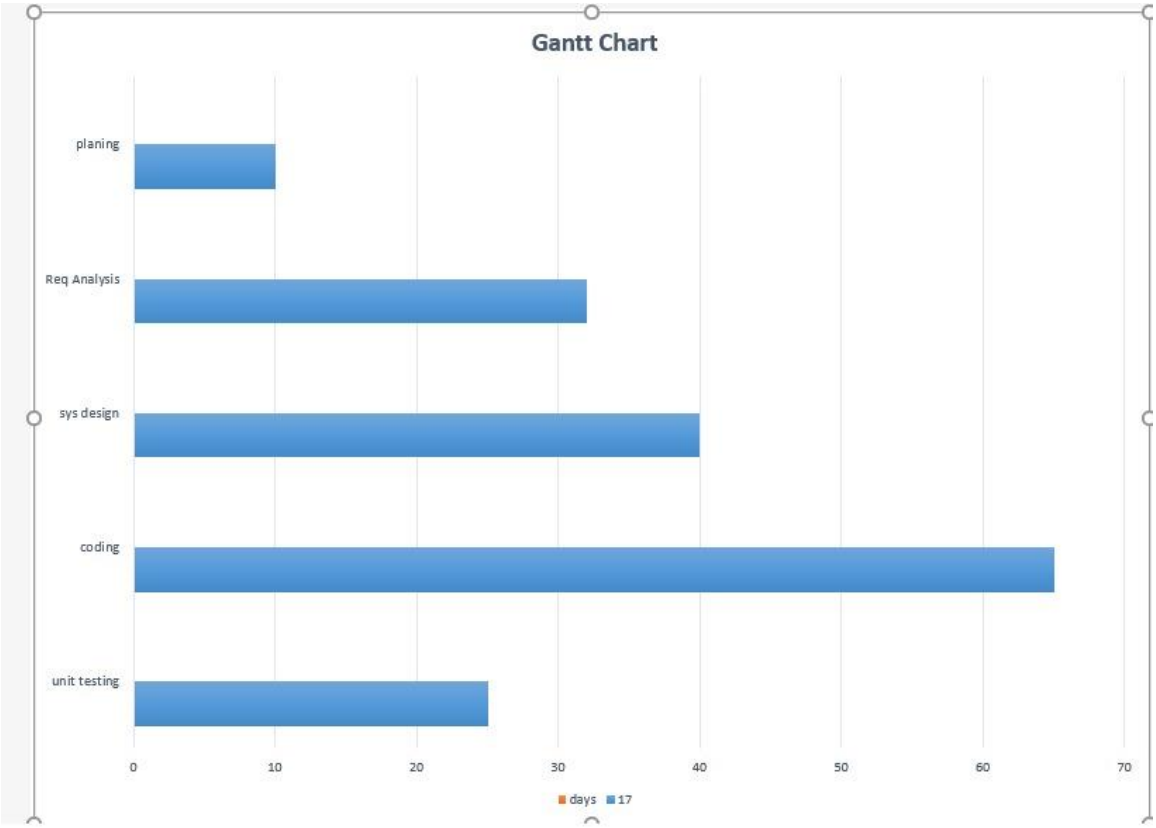
There are several evolving agile process models for different design scenarios which are considered flexible, incremental and repetitive in approach.For

this project, we would be using SCRUM Agile process model because of its support for object oriented software design.

An Agile process model follows these activities:

- Planning
- Requirements Analysis
- Design
- Coding/Implementation
- Unit Testing
- Acceptance Testing

Gantt chart of Proposed System



Tools and Technologies

Below we mention some of major hardware/software tools and technologies with version number which will be used in implementation of the project.

Table 2- Tools and Technologies for Proposed Project

Below we mention some of major tools and technologies which will be used in implementation of our project.

- Html
- CSS
- JavaScript
- Python
- Git
- Collaboration Tool(Microsoft Teams)
- MS Power Point
- OpenCV
- MediaPipe
- TensorFlow
- PyTorch

Project Stakeholders and Roles

The project stakeholders and their roles are as:

Table 3-Project Stakeholders for Proposed Project

Project Sponsor	➢ Ayesha Rasheed ➢ Amina Ateeq
Stakeholder	Project Stake Holders with their roles and responsibilities. ➢ Developer ➢ End-User

Table 4-Team Member Work Division for Proposed Project

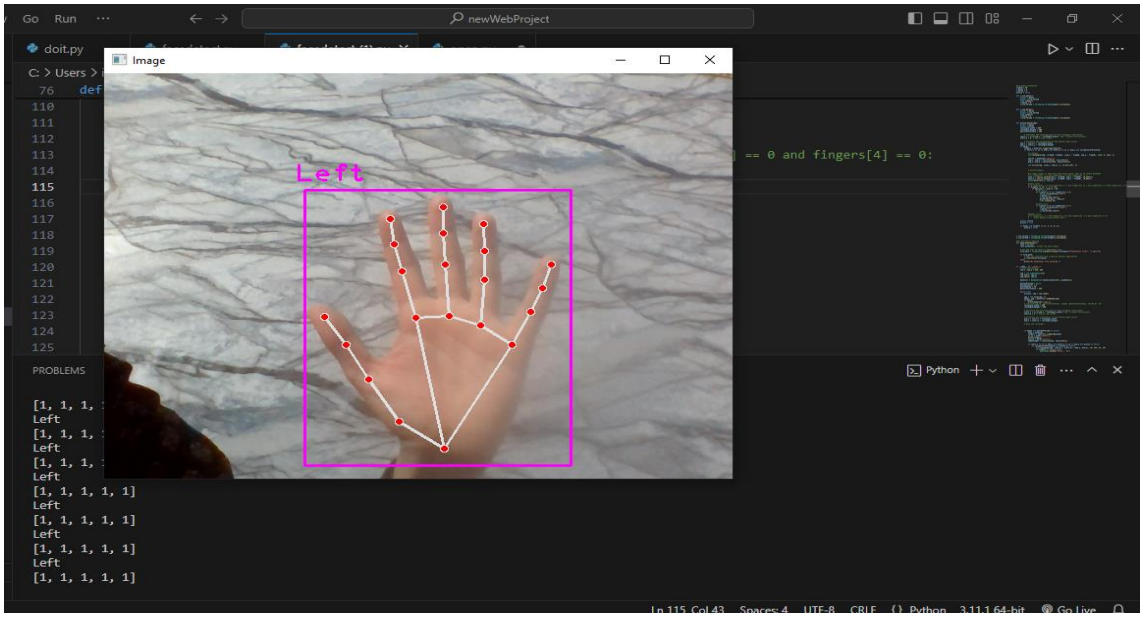
Student Name	Student Registration Number	Responsibility/ Modules
Amina Ateeq	Roll No: 050015	Gesture Recognition
Ayesha Rasheed	Roll No: 049948	Gesture Recognition

Data Gathering Approach

I have gathered all the information from the source of internet, and do self-write.

Mock-up

Here we are inserting mock-up regarding to our project for reviewing



References

- **https://www.w3schools.com/python/**
- **https://www.w3schools.com/python/python_ml_getting_started.asp**
- **https://www.geeksforgeeks.org/digital-image-processing-basics/**
- LeCun, Yann, Yoshua Bengio, and Geoffrey Hinton. "Deep learning." nature 521.7553 (2015): 436-444.
- van Heel, M., Harauz, G., Orlova, E. V., Schmidt, R., & Schatz, M. (1996). A new generation of the IMAGIC image processing system. *Journal of structural biology*, *116*(1), 17-24.
- Suarez, Jesus, and Robin R. Murphy. "Hand gesture recognition with depth images: A review." 2012 IEEE RO-MAN: the 21st IEEE international symposium on robot and human interactive communication. IEEE, 2012.