REFLECTIVE REPORT

VIRTUAL DRAWING SYSTEM

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1 Introduction

1.1Background

One of the most successful visual reasoning approaches used in the design is freehand drawing, an essential part of creative articulation. This is a basic technique for engineers to communicate their ideas using images that provide visual insights for improvement and updating. Hand-drawn diagrams are a simple approach for scientists to communicate and explain their ideas and document, explore, and present them to specialists, clients, and customers. Despite the fact that experts and engineers agree that drawing helps them model their original ideas more efficiently and effectively, sketching is not included in the educational system's curriculum.

The value of freehand sketching as a learning tool for students as they investigate the concepts and techniques of various diagrams is discussed in this study.

1.2 Motivation

The purpose is for a person to interact with virtual items (like a tool) while using simulation programs, which necessitates tracking of motions and interactions with virtual objects (like a tool). As a result, it's difficult to tell the difference between the person and the applications. This effectively makes the software real-time. Different settings can shred this virtual world over huge distances, worth observing. Depending on the type of application and the information transmitted with the server, the environment can also study the agents' world models.

1.3 Overview of the report

This context report is divided into four sections: an introduction, a literature review, a project plan, and a developing your artefact section, which describes how the system is built. In the opening section, the researcher presents the system's history, the targets and objectives that must be met throughout the process, the problem, the solution, and the components of the contextual report are in the final section. The literature study, which will cover the four essential elements of the proposed project, will be divided into seven subcategories in the second phase.

2 Reflection

2.1 Requirement Gathering and Analysis

2.1.1 Task

By reviewing books and papers, I was able to acquire source data. Discussions with experts such as senior software engineers and lectures also provided more information. Using these kinds of facts, I attempted to discover this information. The necessary secondary data was gathered from the internet and other online platforms.

2.1.2 Issues

I couldn't come up with a specific idea for what success factors are required to achieve a conclusion

No opinion on familiar people about my solution

Some sources were difficult to find out.

2.1.3 Solutions

First, I presented my ideas and received criticism and suggestions for improving the system from the supervisor.

Providing information over the internet has always been a top concern for me.

Looked for books and publications that contain factual information

2.2 Designing

2.2.1 Task

I began building interfaces using the knowledge I gathered. Additionally, a database was created. The data set is taken, and an unbalanced dataset is then preprocessed and trained through a neural network.

2.2.2 Issues

Machine Learning and Data Mining are completely new disciplines of study for me, as is the Python programming language.

It took more time than I expected to complete the interfaces.

2.2.3 Solutions

I used data mining in my research project and did more reading and research to understand it better. I also did some more python reading and took an online python course through Udemy.com.

To learn more about Machine Learning, read these articles on the subject.

2.3 Documentation

2.3.1 Task

I finished the project proposal and contextual report, and I still have the thesis report and reflective report to submit.

2.3.2 Issues

It was a huge struggle to fit the text into an appropriate template.

Sources needed to be cited.

There were short academic articles to cover the research adequately.

I had to improve my documentation skills and language skills for a better outcome.

2.3.3 Solutions

utilizing the templates provided by UOB

"Cite this for me" was employed for correct Harvard style reference.

With the guidance of my supervisor, I selected papers.

I improved my language skills and writing skills by referring to different websites and guiding tutorials

3. Future Work

3.1 Current Progress

I created all databases and graphical user interfaces. I'm now working on the second prototype version's final stages. It can be set up in a week, and I'm going to give it another week. Because I couldn't keep up with the actual Gantt chart because their dates were off, I was extra careful to follow the new Gantt chart accurately. I will use a Gantt chart to manage my job by March 15th, 2022.

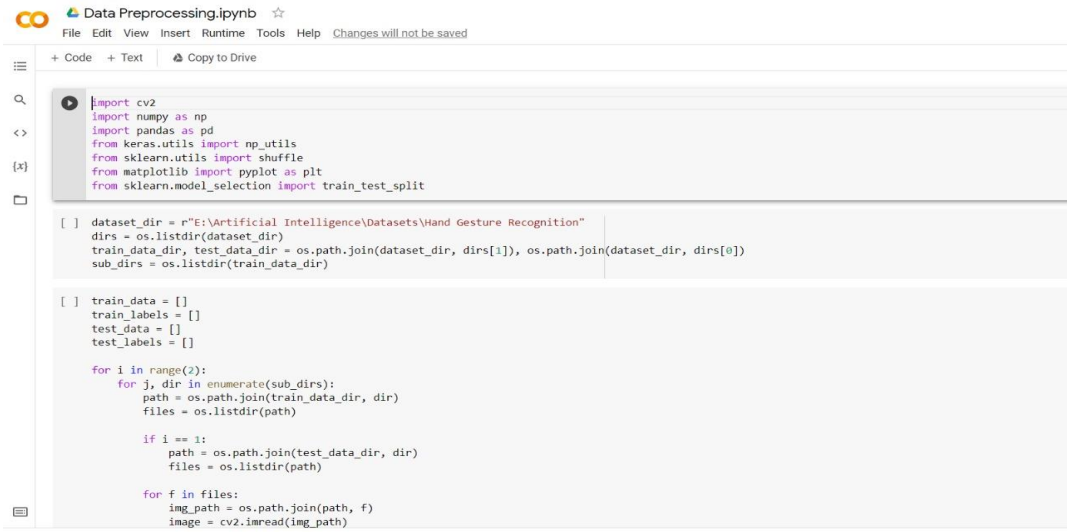

Figure 1 Preprossesing

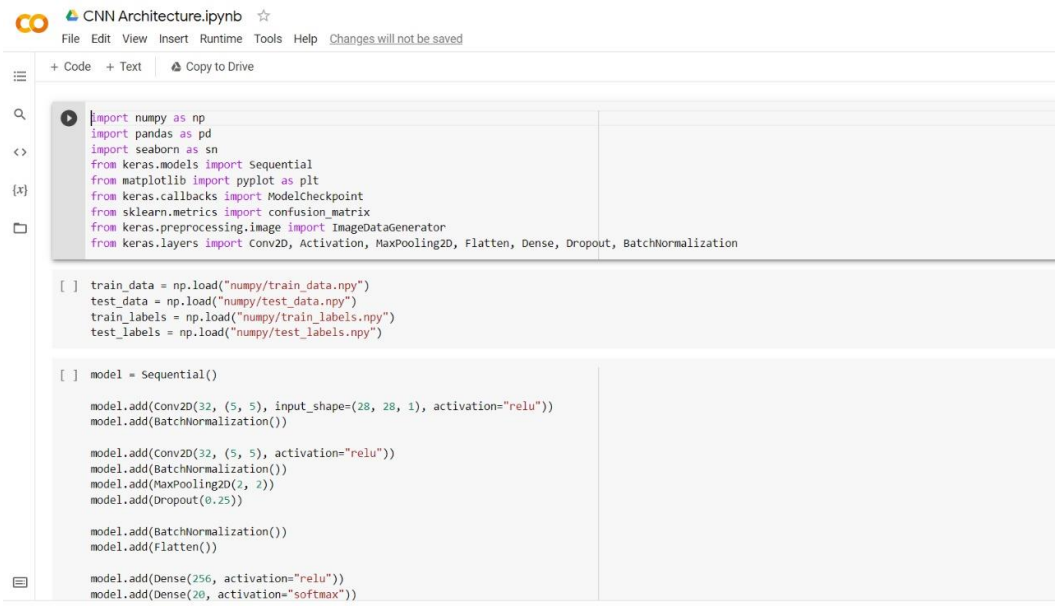

Figure 2 Nural network training

3.2 To be completed

The final steps of the prototype version will be finished by March 22nd, 2022. It will be deployed and tested by April 7th, 2022. The final product will be finalized in the next 10-15 days by repairing the mistakes and defects detected in the prototypes and making any necessary modifications based on the supervisor's comments. The final proposal will be submitted by the third week of April, and users will use it. A Final Thesis report must also be provided as part of the evaluation process.

3.3 Conclusion

The main goal of this chapter was to highlight numerous research done in developing virtual learning apps for educational purposes, platforms utilized in constructing such applications, neural networking, the Python environment, and various interfaces used in developing applications. This review analyzed and contrasted existing applications' benefits, drawbacks, and limitations with the proposed application.

As indicated in the review, many programs have been developed to draw 3D sketches, assisted handwriting and drawing, virtual learning using computer glasses, computer vision, and machine learning. Even though these applications have many virtual properties, image processing and screen recording are missing.

The proposed application features screen recording and taking screenshots to cover this gap. Additionally, this application allows users to extract text from images, which is a valuable feature. Furthermore, this program can use a web camera to predict hand gestures and determine the appropriate sign. Again, this is an excellent tool for self-learners and presenters. Finally, the proposed application can be presented as a flexible and multipurpose mobile assistant to any user.

4. Detailed Thesis

Title page

Abstract

This Section shows the summary of the research project

Dedication

This document section is reserved to express heartfelt respect to those who deserve it.

Acknowledgement

This section of the document is reserved to give a Vote of thanks to people who helped in various ways to complete the project.

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Chapter one: introduction

Project background:

This section describes the motivation behind this project. The main subject and the purpose of the project will be characterised by using project background

Aims and the objectives

This section describes the Aims and objectives which are wanted to be fulfilled at the final step.

Description of the artefact

This section defines the functions and the scope of the completed system

Structure of the report

This part gives a good description of the chapters in the thesis

Chapter Two: Literature Review

2.1 Introduction

This section provides a detailed introduction about the topics discussed in the chapter and the year range of the referred research.

2.2 Similar Applications

Details about similar applications available in the market are discussed in this section. This further indicates the technologies used and the facilities provided for the users by these applications.

2.3 Python Technology

This section provides an idea about features of the Python technology and how it can be used in application development. Furthermore, this section discusses Google's MediaPipe library and Tkinter interface, which is also used to develop the application. Various research on the topics mentioned above is also included in this section.

2.4 Neural Networks

This section provides information about neural networks such as Keras, a Python library for deep learning, and Tensor Flow, introduced as an end-to-end open-source platform for machine learning. Details about various applications that have used this technology are also included in this section

2.5 Conclusion

A conclusion about the topics discussed is written in this section. Moreover, this section reflects the research gap and the methodologies that can fill the gap in a precise manner.

Chapter Three: Research and design

3.1 Design and development

This part describes the design and development process of the project. It also shows some diagrams of the system

3.2 Data gathering

This part describes how primary and secondary data gathered from Literature review and market research

Chapter four: Results and discussions

4.1 Testing and evaluation

This part defines how the project got tested and how we give it to real-time users

4.2 Data analysis

This part explains how the data of the market research have been analyzed.

Chapter five: Evaluation

5.1 Discussion

This part explains the problems encountered while doing the project and the success of the project

5.2 Results and recommendations

This part describes what are the findings of the project

Chapter six: Conclusion

6.1 Benefits of the project

This part shows the benefits of this project to society

6.2 Limitations

This part defines the problems caused by some errors in the project

6.3 Recommendation

This part explains how to finetune the project and what recommendations I give to a new researcher on the topic.

6.4 Future work

This explains the future updates and features of the app.

References