DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MAJOR PROJECT - ACADEMIC YEAR 2023-2024

PROJECT TITLE: AIR CANVAS

Group Members:

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Problem Statement:

The conventional methods of digital drawing often pose challenges in translating creative ideas into tangible forms, requiring complex interfaces and time-consuming processes. Moreover, existing technologies for hand gesture-controlled drawing and annotation lack seamless integration and user-friendly functionalities.

Abstract

In the realm of technological progress, the integration of human gestures as a means of virtual control has gained prominence. Project Air Canvas stands as a testament to this evolution, focusing on the development of a motion-to-textual converter that redefines the act of drawing through hand gestures.

This project is rooted in the refinement of hand tracking systems, leveraging Open Computer Vision Library (OpenCV) and Mediapipe technologies. The core objective revolves around transforming hand movements into an intuitive drawing tool, empowering users to create various shapes and erase effortlessly by merely waving their hand.

Distinguishing itself from conventional methods that often involve complexity and time-intensive processes, Project Air Canvas aims to streamline and enhance user experiences. Through innovative technologies and simplified methodologies, the project utilizes system cameras to track hand gestures, enabling seamless drawing and extending its functionality to annotate PDFs with ease.

Project Objective

In response to these challenges, Project Air Canvas centers on the development of a motion-totextual converter, refining hand tracking systems using Open Computer Vision Library (OpenCV) and Mediapipe technologies. The primary goal is to empower users to effortlessly create diverse shapes and annotations through natural hand movements, thereby simplifying the drawing process and enhancing user experience.

Problem Domain Analysis: Human-Computer Interaction(HCI)

Software Requirement:

- Python
- MediaPipie
- OpenCV
- Numpy

Hardware Requirements

- Camera
- Screen

References:

[1] Melvin Cabatuan,Isaiah Jassen Tupal.Vision-Based Hand Tracking System Development for Non-Face-to-Face Interaction. 2021 IEEE 13th International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment, and Management (HNICEM).