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Air Canvas :Draw in Air Using AI

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Abstract -Drawing in Air has been one of the most fascinating and interesting research areas in the field of visual pattern recognition. Here, visual pattern recognition means to recognize movement of finger tips. It improves the interaction between man and computer in various application. This idea will help in achieving the naturalness desired for Human Computer Interaction(HCI). Proposed method have two main tasks: first it tracks the fingers tip and second it plots the co-ordinates of finger-tipon the screen in any desired colour. It does not require any keypad, pen or glove rather than a camera. This idea of Air Canvas is beyond the traditional empty(white), rectangular and flat-dimensional canvas seen in traditional artworks. We are applying the techniques of computer vision in OpenCV to build this project. To achieve the goal of this project, the finger-tip tracking and detection process are used.Air canvas refers to virtually drawing through hand gesture on the air without touching anything which is recommended during COVID-19. This project will be a powerful means of communication for the deaf,specially abled, senior citizens and children's for educational purposes.

Keywords- Air Canvas, finger-tipon etc.

I. INTRODUCTION

In today's generation, where technology has emerged to such a greater levels that HUMAN-COMPUTER INTERACTION has become increasingly important part of our daily life. The inspiration came from the idea of dustless classroom for students to study in through the digital drawing/teaching methods. To develop this AI based Project, we will be using our trending techniques namely OpenCV and Python.Open cv is mainly known as an open source computer vision and machine learning software . The library has more than 2400 best algorithms, which includes comprehensive set of classic and state-of-the-art computer vision and machine learning algorithms. Most of these algorithms are used to detect and recognize faces, identify objects, classify human activities in videos track camera movements, track moving objects, extract 3D one's.Python is one of the high-level-general-purpose programming language. Object-oriented approach mainly to help programmers to write clear, logical code for small as well as large – scale projects.The essential aim of digital art is of building a system which will help in drawing digitally.

II. METHODOLOGIES

- By detecting the centre coordinates of a large contour, it will store them in the array for next frames.
- The frames are read and converted to HSV colour space.
- The first step is to convert the captured frames into HSV colour space.
- After that, the next step is to find the mask by analysing the tracks.
- This procedure is done using morphological operations.
- Finally, draw the points stored in an array on the frames and canvas.

III. FUTURE SCOPE

Given more time to work on this project, we would improve hand contour recognition, explore our original Air Canvas goals, and try to understand the multicore module.To enhance hand gesture tracking, we would have to delve more into OpenCV. There are many different methods of contour analysis, but in this particular algorithm, it may be worthwhile to take a look at the color histogram used to create the contours in question. Furthermore, we could experiment with different interpolation methods.

PyGameincludes a line drawing method(pygame.draw.line()) that couldprove useful inproducing smoother, cleaner lines.On the same vein, implementing a variety of brush shapes, textures, and even an eraser would make Air Canvas more robust as a drawing program. Allowing the user to save their final work or watch their drawing process as a playback animation could also be unique features that resemble real

creativity software. Perhaps there would even be a way to connect Air Canvas to actual digital drawing programs such as Adobe Photoshop, Clip Studio Paint, or GIMP! Finally, we could make significant strides by figuring out how multicore processing works with in-order information processing.

IV.CONCLUSION

This paper surveys that this system has the capability to challenge traditional drawing/writing methods. This project will be an excellent example for people to interact with digital world. Air Canvas can make text come alive ! This paper surveys a visual based pointing method which allows drawing in air using camera. This project makes the user to have an interactive environment with digital world. This work can further improved by including saving users final work or watching their process as a playback animation can also be a unique feature that resemble real creativity software.

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