Project Proposal for Dynamic Gesture Recognition using Google's Mediapipe Library and Computer Camera

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1 Introduction

We are writing to present a project proposal regarding gesture recognition using the Mediapipe API and the computer's camera. Our objective is to develop an application capable of dynamic hand gesture recognition, which can be used as input for an interactive game on a browser platform.

2 Objective

The objective of this project is to implement an efficient and accurate gesture recognition system capable of identifying and classifying four different dynamic hand gestures.

3 Gesture Recognition for Subway Surfers

To play Subway Surfers using hand gestures, we propose encoding the following hand gestures:

1. Swipe Right: A swipe gesture from left to right can be used to make the character move to the right side of the screen in the game.
2. Swipe Left: A swipe gesture from right to left can be used to make the character move to the left side of the screen.
3. Swipe Up: A swipe gesture from bottom to top can be used to make the character jump over obstacles in the game.
4. Swipe Down: A swipe gesture from top to bottom can be used to make the character slide under obstacles or roll on the ground.

By recognizing these hand gestures, we can map them to the corresponding in-game actions and create an interactive gameplay experience using gesture-based controls that mimic the actions typically performed using touch or keyboard controls in Subway Surfers.

4 Implementation

To ensure a methodical development process, we will initially work offline on recorded video stream data, enabling us to refine the algorithms and achieve high accuracy. Once we have a robust offline implementation, we will focus on integrating the gesture recognition system with the game interactions.

5 Milestones

The main milestones of the project include:

1. Setting up the development environment.
2. Capturing video stream from the computer's camera and detecting hands within the visual field using the Mediapipe API to obtain the hand pose data.
3. Utilizing the collected data to train a gesture recognition algorithm capable of classifying between two and four different gestures.
4. Integrating the recognized gestures as input for a browser game, utilizing Python to handle the connection between gesture recognition and game commands.

6 Conclusion

In conclusion, our project proposal focuses on developing a gesture recognition application using the Mediapipe library for hand pose estimation and the computer's camera. This application will allow users to interact with a browser game using hand gestures as input. The project entails the classification of two to four distinct gestures, specifically designed for playing Subway Surfers.

Thank you for considering our proposal. We look forward to discussing it further and receiving your guidance.

Best regards,

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