AI FACE BODY AND HAND POSE DETECTION WITH PYTHON AND MEDIAPIPE

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Abstract: We therefore present a novel pipeline able to generate motion three-dimensional (3D) skeleton data from single-camera sign language videos only. Utilizing a mediapipe holistic model trained on real motion capture data, we reliably classify body segments built from our newly generated position data with similar accuracy as motion capture data (absolute difference 3.8%). Furthermore, qualitative evaluation of pose animations shows that the avatar performs natural movements that are comprehensible and resemble animations created with original motion capture data.

Individual contribution and findings:

- **Contribution:**

In this report I have implemented the two machine learning algorithm to build the Mediapipe Holistic model with several visualization techniques with OpenCV for the detection of face , hand gestures and body poses or movements in the day to day activities . Moreover I have analyzed the accuracy of this model and tried to improve it by tuning the parameters of the model.

- **Planning Involved:**

First I have designed a whole body movements detection model using OpenCV and Mediapipe Holistic . Then I captured raw video feed with the help of the webcam . After that I used the designed model to detect the various landmarks of our face , hands and the body and also detected their gestures and poses . At last I also added styling to the virtual skeleton detected using the DrawingSpec function .
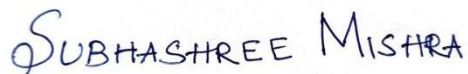
- **Findings:**

In this project , I have collected all the various detections of our whole body including the face , hand gestures and body movements . I also took the outputs at different angles of the camera so as to check the accuracy is maintained or not .
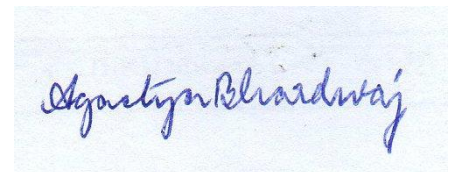
Individual contribution to project report preparation: In the preparation of the report I have contributed for second and third chapters i.e the collection and assimilation of background theory and concepts applied in the project and subsequent implementation of the MediaPipe Holistic Model.

Individual contribution for project presentation and demonstration: I have demonstrated the designing of the Mediapipe Holistic Model and explained all the implementing process of that.

Full Signature of Supervisor/s:

Full signature of the student:

SUBHASHREE MISHRA