Conclusion

When there is no other participant nearby to play against, the AI/computer employs Markov, SVM, and RNN models, which is what this research successfully proved uses CNN supplemented with MediaPipe and Haar Cascade to effectively identify basic hand motions for Rock Paper Scissors.

It has been difficult to collect data and information because of the lack of existing datasets and the kinds of motions available in the available datasets. Thus, this work provides a way to collect data, which makes it simple and quick to gather arbitrary gesture data in any background in real-time.

In this study, we used a convolutional neural network to learn three different sorts of motions, such as scissors, stones, and paper. After that, the network was put to the test, and its responsiveness and accuracy in the area of gesture detection were both excellent. Through the approach used in our paper, researchers will be able to better understand how computer vision interacts with humans as well as how humans interact with computers.

Using both a validating sample and real-world information, we were able to detect hand motions at an incredible 30 frames per second and make accurate predictions. All of our original aims have been met, and the app works well in a broad variety of settings, including low light and varied skin tones, as well as with a wide variety of sizes of hands in front of the camera.

To be more specific, the application works without the need for specialised hardware or software and is quite precise. It not only identifies but also allows users to play against one another in real-time. By using a precise set of algorithms and carefully selecting which ones to use for predictions, an AI can nearly always beat a human brain in this hand-to-hand game.

In the future, we wish to utilise the recurrent neural network architecture we've developed for a wider range of tasks than just games involving hands and fingers. Dataset creation in our study increased processing, which we will investigate more since the model is readily influenced by the limited number of datasets accessible online.