**National Institute of Technology Raipur, Chhattisgarh**

**राष्ट्रीय प्रौद्योगिकी संस्थान, रायपुर**

Diagram

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**M.Tech 2024-26 (First Semester)**

**Department of Information Technology**

**Object Oriented Software Engineering Lab**

**Lab Project Report**

**on**

**“HAND GESTURE ACTIVITIES­ FOR DIGITAL INTERACTION USING COMPUTER VISION”**

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**Abstract**

The **Hand Gesture Activity For Digital Interaction Using Computer Vision** project aims to revolutionize human-computer interaction by enabling touchless control of computers through hand gestures. The system leverages advancements in computer vision and machine learning to recognize and interpret hand gestures in real-time. By utilizing Mediapipe's hand-tracking technology, OpenCV for image processing, and PyAutoGUI for executing commands, the project translates gestures into actions such as mouse control, document navigation, and zooming.

The system processes gestures using a webcam, detects hand landmarks, and identifies specific gestures. These gestures are then mapped to predefined actions using modular classes like MouseControl, DocumentControl, and ZoomControl. For example, swiping a finger controls slide navigation, while specific finger positions trigger mouse clicks or zoom actions.

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