

SUMMARY

Development Of A Hand Gesture Tracking Drawing System For Kids Learning Media Using Neural Network, Ghulam Ahmad Gymnastiar Harun, NIM E41210445, Year 2025, International Class Informatics Engineering, Information Technology, State Polytechnic Of Jember, Ratih Ayuninghemi S.ST., M.Kom.(Supervisor 1) and Dr. Nur Fasihah Binti Mohd Esa (Supervisor 2).

Challenges in traditional drawing-based learning media, such as books and stationery, often limit engagement for children, particularly those with motor coordination difficulties or in digital environments. Conventional tools lack interactivity, adaptability to varying motor skills, and real-time feedback, leading to reduced creativity, cognitive development, and overall educational effectiveness. Existing gesture recognition systems are typically designed for adults, failing to accommodate children's inconsistent gestures, hand sizes, or motion speeds, resulting in lower usability and limited appeal in educational settings.

This research aims to develop an innovative hand gesture tracking system as an interactive drawing tool for children's learning media, leveraging neural networks to detect and interpret hand movements in real-time. The system provides accurate gesture classification, adaptive interfaces, and immediate visual feedback to enhance engagement, while aligning with child-centric design principles to foster creativity, fine motor skills, and cognitive growth. By achieving 90% motion recognition accuracy and supporting features like customizable sensitivity and learning modules, the system offers a fun, accessible alternative to traditional methods.

The project encompasses the creation of a robust platform integrating MediaPipe for hand landmark detection, TensorFlow for gesture classification, and a child-friendly interface for real-time drawing and educational activities. It targets primary users children as well as educators and parents for monitoring and support, with structured development using Agile methodology to ensure scalability and inclusivity. Through this approach, the system seeks to bridge traditional and digital learning, significantly improving educational outcomes and preparing children for technology-driven interactions in a motivating, equitable manner.