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Gesture Recognition translator using ML, Computer Vision and MediaPipe

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Abstract: *Hand gesture recognition technology is transforming how humans interact with computers, especially in contactless interfaces and assistive communication. This paper presents the design and evaluation of a real-time hand gesture recognition system that combines Google's MediaPipe for landmark detection with classic machine learning on robust geometric features. The method strategically selects only critical distance-based features between the wrist and fingertips, and from thumb to other fingertips, resulting in a lightweight yet highly accurate classifier. Supporting f ive distinct static gestures—hello, good, yes, no, and thank you—the system achieves near perfect recognition under typical webcam lighting. The paper details all stages, from dataset creation to live testing, and discusses plans for expanding gesture vocabulary and integrating audio feedback for multimodal interaction.*

Keywords*:* Machine Learning, Computer Vision, OpenCV, Mediapipe

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