

Implementation of an Embedded Masked Face Recognition System using Huskylens System-On-Chip Module

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Abstract:

Globally, Facial recognition systems have been increasingly adopted, by governments, as a viable means of identification and verification in public spaces such as the airport, train stations, and stadiums. However, in the wake of the COVID-19 outbreak, the World Health Organization (WHO) declared that wearing face masks is an essential safety precaution. As a result, current facial recognition systems have difficulties recognizing faces accurately, which motivated this study. This research aims to implement an embedded masked face recognition system using the HuskyLens SoC module to identify people, even while wearing a face mask. The developed method was actualized using the Kendryte K210 chip embedded in the HuskyLens module. This system-on-chip design was integrated with other peripherals using an Arduino Pro-mini board. The results of testing and evaluating the system's performance show that the system's facial recognition accuracy with masked and without masks faces was 90% and 95%, respectively. Implementing this solution in our environment would enable accurate real-time recognition of masked and unmasked faces

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I. Introduction

Over the years, there has been a rapid enhancement in human-computer interaction and face recognition studies. These were based on the discovery that the human face contains certain information, including one's identity, age group, race, sex, and facial gestures, that reflect a person's emotional and mental state [1]. A computer can extract and interpret this information to either identify or verify that person's identity [2] [17]. For these reasons, the human face has become one of the most widely used and preferred biometric authentication methods.

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