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## **2023**

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INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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**Wednesday**

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## 2023

INTERNATIONAL JASIN MULTIMEDIA & COMPUTER SCIENCE  
INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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# Web Application of Facial Emotion Recognition in Classroom Learning Environment with Raspberry Pi 4

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This project is focused on developing a web application that integrates facial emotion recognition technology with the Raspberry Pi 4 and its camera. The application allows educators to analyze students' emotional responses during lectures, which can help them evaluate learning comprehension and refine teaching techniques. The Raspberry Pi 4 captures student faces and sends the data to the server application through motion stream. The web application, developed using Flask, displays comprehensive information on student emotions. This information can help educators make informed decisions about their teaching methods. Although it went to various testing, there were some challenges such as setting a maximum number of images during model training due to memory constraints. This project is a promising application for emotion-aware education. It can contribute to improved student-teacher interactions and foster a conducive learning environment. The successful integration of facial expression recognition technology with the Raspberry Pi 4 promotes a more engaging and emphatic learning environment for all students by empowering educators to assess students' emotional responses and modify their teaching strategies accordingly.

*Keywords—facial emotion recognition, Raspberry Pi, classroom learning, web application*



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