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(51) International classification	:G06F 21/32, G06K 9/00, G10L 17/00, G06V 40/16, G10L 17/22	(71) Name of Applicant : 1)NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY Address of Applicant :19, KNOWLEDGE PARK-II, INSTITUTIONAL AREA, GREATER NOIDA-201306, GAUTAM BUDDHA NAGAR, UTTAR PRADESH, INDIA Uttar Pradesh India (72) Name of Inventor : 1)GAURANGI SHARMA 2)LAVANYA KAPOOR 3)GARIMA JAIN
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(57) Abstract :

Disclosed herein is a system (100) for multi-factor biometric authentication using facial and voice inputs that comprises a user device (102), an authentication trigger module (104) configured to initiate authentication based on user input, a camera unit (106) configured to capture facial image data, and a microphone unit (108) configured to capture voice audio data. A processing unit (110) coordinates system operation, and a pre-processing module (112) performs normalization of facial data and noise reduction of voice data. A facial recognition module (114) and a liveness detection module (116) process facial inputs, while a voice recognition module (118) and a voice activity detection module (120) process voice inputs. A feature extraction module (122), biometric matching module (124), score normalization module (126), fusion module (128), and decision module (130) generate an authentication decision using stored templates in a database (132), thereby enabling secure and reliable real-time user authentication.

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