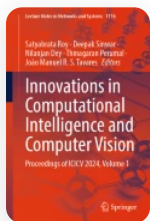


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Deep Learning-Based Multimodal Sensing Framework for Anti-spoofing Systems

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**Innovations in Computational
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[Henry O. Velesaca](#) , [Jorge Vulgarin](#), [Boris X. Vintimilla](#), [Coen Antens](#) & [Alberto Rubio Perez](#)



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Abstract

This paper presents a multimodal facial anti-spoofing framework based on a Deep Learning approach using a stereo vision and voice sensing system. This framework is part of a project for an intelligent receptionist robot and its function is to authenticate people

by applying a face recognition redundancy process that prevents the identity theft of a person. The proposal consists of a smart screen that has a multimodal sensing system including cameras and audio. The redundancy approach pipeline for face recognition contains a face and voice recognition module and a 3D face verification module to determine whether the person is real. The system initially acquires and processes a stream of images and audio in real-time, using deep neural networks it detects and recognizes the face and voice of a person, then aligns the images from two cameras and obtains the 3D point cloud of the detected human face in the scene, and finally uses this 3D information to verify whether the recognized person is real. The proposed solution is evaluated with different people to validate the effectiveness of the system. The dataset will be available for the research community.

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Author information

Authors and Affiliations

Escuela Superior Politécnica del Litoral, ESPOL, Facultad de Ingeniería en Electricidad y Computación, CIDIS, Campus Gustavo Galindo, Guayaquil, 09-01-5863, Ecuador

Henry O. Velesaca, Jorge Vulgarin & Boris X. Vintimilla

Software Engineering Department, University of Granada, Granada, 18014, Spain

Henry O. Velesaca

Computer Vision Center, Universidad Autónoma de Barcelona, Bellaterra, Barcelona, 08193, Spain

Coen Antens & Alberto Rubio Perez

Corresponding author

Correspondence to [Henry O. Velesaca](#) .

Editor information

Editors and Affiliations

Department of Computer Science and Engineering, Manipal University Jaipur, Jaipur, Telangana, India

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