

Abstract**Systems and Methods for Spoof Detection and Liveness Analysis**

Spoof-detection and liveness analysis is performed using a software-based solution on a user device, such as a smartphone having a camera, audio output component (e.g., earpiece), and audio input component (e.g., microphone). One or more audio signals are emitted from the audio output component of the user device, reflect off a target, and are received back at the audio input component of the device. Based on the reflections, a determination is made as to whether the target is comprised of a three-dimensional face-like structure and/or face-like tissue. Using at least this determination, a finding is made as to whether the target is likely to be spoofed, rather than a legitimate, live person.

Fig. 2