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Radio-Frequency (RF) Imaging Sensor for Advanced Security Fingerprint Biometrics and Mobile Health Monitoring

Current portable and wearable devices use fingerprint analysis for secure authentication. The fingerprint pattern systems analyze only the surface morphology of the fingerprint, making it easy for hackers to spoof and bypass authentication. RF signals can collect tissue information beyond the surface of the finger and can provide increased security since the tissue patterns are unique and not easily spoofed in comparison to using only fingerprint information. Therefore, there is need to design a system with advanced security authentication that is not easily spoofed.

Researchers at ASU have developed an improved method of biometric authentication enabling low-profile imaging systems for highly secure fingerprint biometrics and mobile health monitoring. The compact nature of the device allows integration of the sensor in portable or wearable devices and provides subsurface skin tissue images in real-time. The device is deployable in wearable electronics and gives the added benefit of monitoring tissue health. Overall, the RF-based biometric authentication system provides excellent security as well as an outlet for mobile health monitoring.

Potential Applications

- Biometric authentication
- RF sensors
- Portable and wearable electronics
- Mobile health monitoring

Benefits and Advantages

- Increased Security – High frequency waves that are safe for the human body provide high resolution images of the subsurface tissue morphology to provide accurate and secure authentication
- Real-Time Health Monitoring – The system can detect vital skin tissue conditions like sweat and provide real-time health monitoring that can be integrated in wearable electronic devices

For more information about the inventor(s) and their research, please see:

[Dr. Georgios Trichopoulos' directory webpage](#)

