trinamiX

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Background information

About trinamiX GmbH

trinamiX GmbH develops and sells cutting-edge biometric and mobile NIR spectroscopy solutions, which are used in both consumer electronics and industrial designs. The company's products enable humans and machines to better capture data with the goal of understanding the world around us. This results in improved decision-making as well as stronger biometric security.

trinamiX, based in Ludwigshafen/Rhine (Germany), was founded in 2015 as a wholly owned subsidiary of BASF SE. The company employs over 200 dedicated specialists working from offices in Germany, China, Japan, Korea and USA. trinamiX owns broad intellectual property rights to its technologies, holding more than 370 patents and patent applications.

About trinamiX Face Authentication

trinamiX Face Authentication sets a new biometric standard by simultaneously performing 2D face detection/recognition and a novel liveness check, which verifies a user's liveness based on the detection of human skin.

The solution comes as a powerful, patent-protected hardware and software setup for integration into various consumer electronics, particularly smartphones. It includes a cost-efficient hardware reference design, which can be tailored to varying customer needs and requirements. In combination with trinamiX's own algorithms, the system allows for a unique method to make biometric authentication even more secure: It introduces skin detection to reliably repel even advanced fraud attacks (e.g., using a realistic facial replica). These fraud attacks still pose a crucial security challenge to common authentication systems.

trinamiX Face Authentication is the world's first to pass the highest biometric security requirements, even while all hardware is invisibly mounted behind the smartphone's display. The solution has been tested and certified according to the FIDO Alliance Biometric Component Certification Program, the IIFAA Biometric Face Security Test Requirement and the Android™ Biometric Security Test. Over a period of many weeks, the technology was exposed to countless sophisticated spoof attempts including ultra-realistic masks. trinamiX Face Authentication ultimately passed each test with a Spoof Acceptance Rate (SAR) of 0 %, thus fulfilling the requirements of Android Class 3 (strong), FIDO Levels A/B and C and IIFAA for mobile payment.

More technical specifications can be found in our **product brief**.

About the technology: Beam Profile Analysis

trinamiX Face Authentication combines 2D face detection/recognition to verify the identity of a given user and a unique liveness check to keep them safe against fraud attacks. The liveness check is based on trinamiX's patent-protected technology *Beam Profile Analysis* (BPA). It makes sure that the presented face is an actual human-being and not, e.g., a three-dimensional silicone mask.

BPA is an active measuring principle that is built on the combination of hardware and software: The object to be measured is illuminated by a light source emitting a regular dot pattern. The reflection of each light spot is captured by an IR camera and analyzed by unique algorithms. From each specific beam profile, the algorithms extract information about the surface material of the measured object. The differentiation of "skin" vs. "no skin" is made.

Learn more about the technology in our **explanatory video on Beam Profile Analysis**.