

**Doctoral School of Information and Biomedical Technologies
Polish Academy of Sciences (TIB PAN)**

SUBJECT:

Methods for Multi-channel Face Presentation Attack Detection.

SUPERVISOR:

dr hab. inż. Marcin Kowalski, prof. WAT

e-mail: marcin.kowalski@wat.edu.pl

tel. 261 839 353

Wojskowa Akademia Techniczna im. Jarosława Dąbrowskiego

ul. gen. Sylwestra Kaliskiego 2, 00-908 Warszawa

dr inż. Ewelina Bartuzi-Trokielewicz

e-mail: ewelina.bartuzi@nask.pl

NASK - Państwowy Instytut Badawczy

ul. Kolska 12, 01-045 Warszawa

DESCRIPTION:

Facial recognition has become a widely used biometric modality, but the vulnerability of biometric systems to presentation attacks is often an obstacle to their reliable use. Presentation attack detection methods suggested in the literature, based on analysis of images captured in visible light, often fail to cope with generalization for new types of attacks and are sensitive to changes in the environment in which biometric samples are captured. Therefore, it is essential to conduct research on the potential of multichannel methods for detecting presentation attacks.

The solutions developed in this study aim to improve the accuracy and effectiveness of presentation attack detection systems, which will reduce a fraud rate and increase the overall security of biometric systems using facial recognition.

BIBLIOGRAPHY:

1. George, Anjith, and Sébastien Marcel. "Multi-channel face presentation attack detection using deep learning." *Deep Learning-Based Face Analytics (2021)*: 269-304.
2. Heusch, Guillaume, et al. "Deep models and shortwave infrared information to detect face presentation attacks." *IEEE Transactions on Biometrics, Behavior, and Identity Science* 2.4 (2020): 399-409.
3. George, Anjith, and Sébastien Marcel. "Robust Face Presentation Attack Detection with Multi-channel Neural Networks." *Handbook of Biometric Anti-Spoofing: Presentation Attack Detection and Vulnerability Assessment*. Singapore: Springer Nature Singapore, 2023. 261-286.

4. Mostaani, Zohreh, et al. "The high-quality wide multi-channel attack (HQ-WMCA) database." arXiv preprint arXiv:2009.09703 (2020).
5. George, Anjith, and Sébastien Marcel. "Can your face detector do anti-spoofing? face presentation attack detection with a multi-channel face detector." arXiv preprint arXiv:2006.16836 (2020).
6. Kowalski, Marcin. "A study on presentation attack detection in thermal infrared." Sensors 20.14 (2020): 3988.
7. George, Anjith, et al. "Biometric face presentation attack detection with multi-channel convolutional neural network." IEEE transactions on information forensics and security 15 (2019): 42-55.
8. ISO/IEC 30107-1:2023(E), "Information technology — Biometric Presentation Attack Detection — Part 1: Framework," standard, International Organization for Standardization, Geneva, 2023.
9. ISO/IEC 30107-3:2023(E), "Information technology — Biometric Presentation Attack Detection — Part 3: Testing and Reporting," standard, International Organization for Standardization, Geneva, 2023.