Visual memory, biometrics and applications to cybersecurity

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Résumé

In the past decade, biometric authentication methods have received particular attention for their potential to enhance security and user convenience,surpassing traditional methods such as passwords, security tokens or other authentication modalities. Also, in response to constantly evolving threats, and the ongoing need to reinforce security measures, one promising avenue is the exploration of the pupillary reflex as a unique biometric indicator. The human pupil undergoes involuntary changes in response to external stimuli, and these reflexive alterations can be captured and analyzed for authentication purposes. The aim of this PhD thesis is to investigate the feasibility and effectiveness of using reflexive pupil size as a biometric authentication method, particularly when exposed to visual stimuli. By understanding how the pupil responds to specific visual cues, we hope to establish a reliable and non-intrusive means of authenticating individuals.

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