

Emotional security system

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A security system that analyses a user's brainwaves could determine whether the user is in a fit mental state to be granted access to resources. Details are published in the *International Journal of Advanced Intelligence Paradigms*.

A security system is being developed that analyses the user's brainwaves. The system then determines whether the user is in a fit mental state and grants them [access](#) to resources only if appropriate. Such a system might be used to control entry to a building, access to computer resources or even the withdrawal of money from an automated teller machine. It could also have applications in the military, electronic learning, and healthcare, according to research published in the International Journal of Advanced Intelligence Paradigms.

Most security systems simply expect a PIN or password while biometric systems look for a fingerprint, a view of the user's iris or retina or some other mundane but unique characteristic. Now, Violeta Tulceanu of the University of Iasi is adding an emotion detector to biometric security.

"The true engine of motivation is our capacity to perceive pleasure and fear pain, and thus, reward and punishment," explains Tulceanu. "Our ability to react to dangerous situations is directly related to our capacity to relate to our environment, and our sense of self-preservation." As such, if one is in a well-balanced [emotional state](#) one will react to external factors according to context, group expectations, education, cultural background, social norms and personal inclinations, these are what game theory refers to as rational players. However, we are

emotional creatures subject to wants and desires, lusts, greed, happiness and sadness, as well as the psychoactive effects of chemical stimulants that might make access to particular resources in some contexts inappropriate or hazardous.

In the new approach, Tulceanu first trains the system to recognise a user's emotional "fingerprint" based on the patterns of electrical brainwaves they generate when presented with specific, evocative auditive stimuli. Each emotional state is matched to a given pattern and these are then associated with particular configurations of the system that allow or preclude access to given resources. When the user next presents requesting access, the system simply measures the current electrical brain activity and if the result of processing the credentials matches the "emotional fingerprint" access is granted or refused accordingly.

The system might thus be used to assess whether a person is acting responsibly and of their own accord. Tulceanu suggests that such a system could be used to ensure the safety and security of individuals and those around them that might be at risk if access is granted to particular resources. After all, any of us might suffer from depression, stress, or anxiety, as well as substance abuse which might affect detrimentally decisions made when accessing sensitive resources. Future work on this system involves being able to predict slow variations in the emotional state that may indicate a degenerative mental illness or chronic depression, helping prevent critical episodes.

Until recently, studies of emotion have been tarred with a somewhat pseudoscientific brush dating back to the nineteenth century and such quackery as phrenology. However, modern research techniques show that far from being ineffable, emotion is completely neurological, and lies at the core of all learning mechanisms. Thus, it can be treated more objectively in appropriate contexts.

More information: Violeta Tulceanu. Brainwave authentication using emotional patterns, *International Journal of Advanced Intelligence Paradigms* (2017). [DOI: 10.1504/IJAIP.2017.081177](https://doi.org/10.1504/IJAIP.2017.081177)

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