Brainwaves as a Biometric Parameter for Unique Identification and Authentication
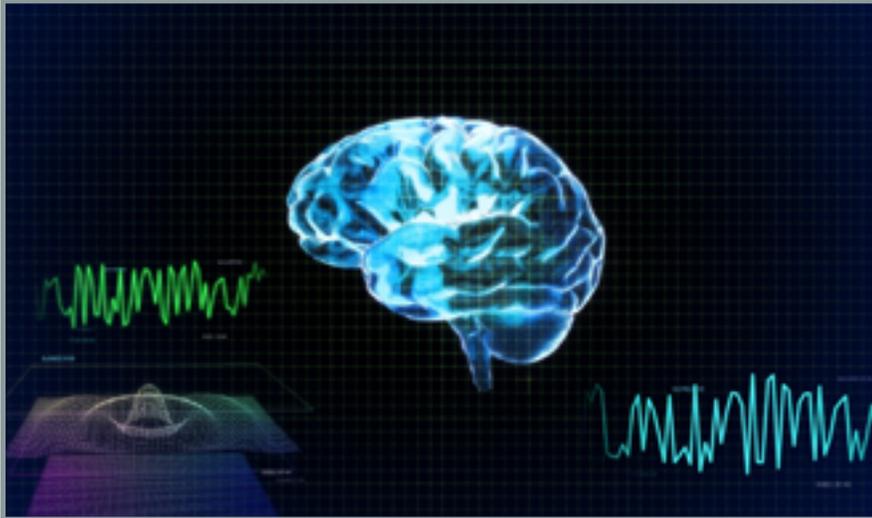
Technology Summary

A number of biometric parameters exist for positive identification of individuals including, fingerprints, facial recognition, ear pattern, eye iris and retina, written signature, voice, and facial thermogram. The objectives of personal identification are primarily to deter identity deception and to accelerate recognition of trusted personnel. The use of current methods for positive identification is impacted by a number of factors including universality, uniqueness, permanence, collectability, performance, acceptability, and circumvention.

Researchers at ORNL have developed a novel method of identifying and authenticating individuals, which offers improvement over current methods through increased performance, robustness, and reliability, while preventing circumvention of the system. The method uses brain wave data uniquely formed from an individual's thought process. The brain waves are sampled using EEG equipment and processed using phase-space distribution functions to compare digital signature data from the enrollment of authorized individuals. The developed method provides authentication (verification that test and enrollment biometric data are confirmed to be the same) and identification (determination that enrollment and test biometric data match to identify an individual among others).

The technology could be utilized for organizations requiring very high assurance of a person's identity including federal/state/local government and financial institutions.

Advantages

- Rapid access for verified individuals to appropriate information and facilities while denying access to imposters
- Both identification and authentication
- Robust and reliable method

Potential Applications

- Security
- Control access to information and facilities
- Individual authentication and identification

Patent

Lee Hively, *Methods for Using a Biometric Parameter in the Identification of Persons*, U.S. Patent 8,065,529, issued November 22, 2011.

Inventor Point of Contact

Lee M. Hively
Computational Sciences and Engineering Division
Oak Ridge National Laboratory

Licensing Contact

David L. Sims
Commercialization Manager
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.241.3808
E-mail: simsdl@ornl.gov

PARTNERSHIPS