International Journal of Cognitive Biometrics

Inaugural Issue Call for Papers

Deployment of Biosignals

The International Journal of Cognitive Biometrics (IJCB) is a venue dedicated to the publication of novel approaches to biometrics based on cognitive aspects of human behaviour. This recent approach to biometrics typically utilises biosignals (such as the EEG and ECG) produced by cognitive and emotional brain states as the authentication medium. These biosignals can be acquired under a variety of circumstances involved in human machine interaction. Cognitive biometrics fills the divide between behavioral and physiological biometrics. In order to fulfil this bridging role, cognitive biometrics relies on the approaches across all aspects within the biometrics community. Ultimately, this journal calls upon the scientific community at large to consider how physiological and neurological processes, associated with cognition, can be harnessed appropriately to yield person specific individuality in quantifiable terms.

The inaugural issue of the journal will focus mainly (but not exclusively) on the **deployment of biosignals** such as EEG and ECG as tools for user authentication/identification. *However, authors wishing to submit papers on other topics within the IJCB remit (see http://www.inderscience.com/ijcb) should please do so.*

Biosignals have the potential to yield a window into the current cognitive and emotional state of an individual. Natural variability between individuals provides a basis from which one can expect a reasonable level of uniqueness across individuals. A primary research effort must engage in examining exactly how unique biosignals are, not only across individuals but within individuals across repeated measures. Secondly, how are biosignals influenced by task performance – are there specific tasks that can facilitate the extraction of potentially unique features embedded within a particular biosignal? This of course begs the question of determining the depth of the feature space of biosignals, a topic that is central to this inaugural issue. This step may be explored by utilising a variety of authentication methods – such as textual based password systems, graphical and VR based mechanisms, game playing based mechanisms, and as yet additional mechanisms awaiting disclosure.

Once this set of basic research steps have been examined in a thorough and comprehensive fashion, we can begin to properly claim to have added a new approach to user authentication, that we term *Cognitive Biometrics*. This call is dedicated to setting this examination into action, and we solicit submissions on the following set of topics, which include but are not limited to:

- Quantitative methods for feature extraction from EEG, ECG, and related biosignals
- examination of the individuality of biosignals – such as their heritability
- The reproducibility of biosignals under a variety of experimental conditions
- Various technology based approaches to biosignal extraction – such as dry electrodes and related technologies
- Machine learning approaches to biosignal feature extraction
- The effects of physical health, mental status, and ageing on the feature space of biosignals
- The influence of task performance – are there specific tasks that elicit more stable biosignal features?
- The influence of multi-tasking on biosignal stability
- Multi-modal biosignal based approaches to user authentication and/or identification
- Incorporating a biosignal based approach into more 'traditional' authentication schemes
- Any other topics that are related to biosignal acquisition within a context suitable for biometric applications

Notes for Prospective Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. (N.B. Conference papers may only be submitted if the paper was not originally copyrighted and if it has been completely re-written).

All papers are refereed through a peer review process. A guide for authors, sample copies and other relevant information for submitting papers are available on the Author Guidelines page.

Important Dates

Manuscript Due: 1 July, 2010
First Round of Reviews: 1 September, 2010
Publication Date: 1 January, 2011

Editors and Notes

All papers *must* be submitted online. To submit a paper, please go to <u>Online Submissions of Papers</u> (<u>http://www.inderscience.com/mapper.php?id=29</u>). If you experience any problems submitting your paper online, please contact submissions@inderscience.com, describing the exact problem you experience. (<u>Please include in your email the title of the Special Issue, the title of the Journal and the name of the Guest Editor</u>).