



BrainPrint: Identifying Unique Features of Brain Activity with Machine Learning

Mavi Ruiz-Blondet

Cognitive Psychology & Biomedical Engineering
Binghamton University

Wednesday October 8th, 2014
8:30-9:30am
Biotechnology Building BI 2221
(ITC Conference Room)



The human brain continually generates electrical potentials representing neural communication. These potentials can be measured at the scalp, and constitute the electroencephalogram (EEG). Research from cognitive neuroscience suggests that there are individual differences in functional brain organization; here, we investigate the degree to which a stronger claim can be made, namely, that each individual's functional brain organization may be unique. Further, we perform this investigation with the applied goal of continuing to evaluate the EEG as a biometric characteristic. We applied several pattern classifying algorithms to EEG formed via averaging into Event-Related Potentials (ERPs) representing the response of individuals to a stream of text designed to be idiosyncratically familiar to different individuals. Results indicate that there are robustly identifiable features of the ERP that enable all pattern classifiers tested to label tokens of the ERP as belonging to individuals with accuracy in the range of 80-90%.

Mavi Ruiz-Blondet is a former MS student in Biomedical Engineering, and a current PhD student in Cognitive Psychology, both at Binghamton University. Her research interests include human-computer interfaces, brain-computer interfaces (BCI), and applications of signal processing/machine learning.

For more information, contact Hiroki Sayama (sayama@binghamton.edu)
<http://coco.binghamton.edu/>