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ISMB 2018 Abstracts Submission 15

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Paper 15

Title:	Automated Interpretation of Abnormal Adult Electroencephalograms
Track:	MLCSB COSI: Machine Learning in Computational and Systems Biology
Author keywords:	electroencephalogram (EEG) abnormal deep learning
Abstract:	<p>Interpretation of electroencephalograms (EEGs) is a process that is dependent on the subjective analysis of the examiner and has low interrater agreement. As a first step for EEG analysis, neurologists categorize the signals as normal or abnormal. In this investigation, we explore the hypothesis that high performance automatic classification of an EEG signal as abnormal can approach human performance by examining the first few minutes of an EEG recording. This study establishes a baseline for automated classification of abnormal adult EEGs using machine learning and a big data resource – The TUH EEG Corpus. A demographically balanced subset of the corpus was used to evaluate performance of the systems. The data was partitioned into training (1,387 normal and 1,398 abnormal files) and evaluation (150 normal and 130 abnormal files) sets.</p> <p>We compared the performance of several well-established technologies: hidden Markov Models (HMMs) (26.1% error rate), an HMM with a Stacked Denoising Autoencoder (HMM-SdA) (24.6%) and a deep learning system that combined a Convolutional Neural Network with a Multilayer Perceptron (CNN-MLP) (21.2%). We have established an experimental paradigm that can be used to explore this application and have demonstrated a promising baseline using state of the art deep learning technology.</p>
Submitted:	Feb 27, 20:23 GMT
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Submission Type	Poster Only
Abstract Presenting Author Name	Joseph Picone
Consider my submission for other COSIs	CAMDA: Critical Assessment of Massive Data Analysis MLCSB: Machine Learning in Computational and Systems Biology TransMed: Translational Medical Informatics
Previously Published Abstract	

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