ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM FOR PREDICTING ALPHA BAND POWER OF EEG DURING MUSLIM PRAYER (SALAT)

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The features of electroencephalographic (EEG) signals include important information about the function of the brain. One of the most common EEG signal features is alpha wave, which is indicative of relaxation or mental inactivity. Until now, the analysis and the feature extraction procedures of these signals have not been well developed. This study presents a new approach based on an adaptive neuro-fuzzy inference system (ANFIS) for extracting and predicting the alpha power band of EEG signals during Muslim prayer (Salat). Proposed models can acquire information related to the alpha power variations during Salat from other physiological parameters such as heart rate variability (HRV) components, heart rate (HR), and respiration rate (RSP). The models were developed by systematically optimizing the initial ANFIS model parameters. Receiver operating characteristic (ROC) curves were performed to evaluate the performance of the optimized ANFIS models. Overall prediction accuracy of the proposed models were achieved of 94.39%, 92.89%, 93.62%, and 94.31% for the alpha power of electrodes positions at O1, O2, P3, and P4, respectively. These models demonstrated many advantages, including efficiency, accuracy, and simplicity. Thus, ANFIS could be considered as a suitable tool for dealing with complex and nonlinear prediction problems.

Keywords: Adaptive Neuro-Fuzzy inference system; Alpha power band; Electroencephalographic (EEG); Muslim prayer (Salat)

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**Keywords**: Adaptive Neuro-Fuzzy inference system; Alpha power band; Electroencephalographic (EEG); Muslim prayer (Salat)
Our ANFIS paper
3 messages

Hazem Doufesh <hdoufesh@staff.alquds.edu> Sat, Dec 24, 2016 at 10:10 PM
To: fatimah <fatimah@um.edu.my>, NOOR AZINA Ismail <nazina@um.edu.my>, Wan Azman Wan Ahmad <wanazman@ummc.edu.my>, Hazem Doufesh <hdoufesh@staff.alquds.edu>

Dear my profs,

Congratulations, our ANFIS paper has been published online now:


Thank you so much

You’re student

Hazem

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Hazem Doufesh, Ph.D.
Assistant Professor of Biomedical Engineering
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NOOR AZINA Ismail <nazina@um.edu.my> Sun, Dec 25, 2016 at 5:15 AM
To: Hazem Doufesh <hdoufesh@staff.alquds.edu>
Cc: Fatimah Ibrahim <fatimah@um.edu.my>, wanazman@ummc.edu.my

Thanks Hazem and congratulation again.

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