

## A Time Delay Neural Network for Prediction of Human Behavior

**Authors :** A. Hakimiyan, H. Namazi

**Abstract :** Human behavior is defined as a range of behaviors exhibited by humans who are influenced by different internal or external sources. Human behavior is the subject of much research in different areas of psychology and neuroscience. Despite some advances in studies related to forecasting of human behavior, there are not many researches which consider the effect of the time delay between the presence of stimulus and the related human response. Analysis of EEG signal as a fractal time series is one of the major tools for studying the human behavior. In the other words, the human brain activity is reflected in his EEG signal. Artificial Neural Network has been proved useful in forecasting of different systems' behavior especially in engineering areas. In this research, a time delay neural network is trained and tested in order to forecast the human EEG signal and subsequently human behavior. This neural network, by introducing a time delay, takes care of the lagging time between the occurrence of the stimulus and the rise of the subsequent action potential. The results of this study are useful not only for the fundamental understanding of human behavior forecasting, but shall be very useful in different areas of brain research such as seizure prediction.

**Keywords :** human behavior, EEG signal, time delay neural network, prediction, lagging time

**Conference Title :** ICMBE 2015 : International Conference on Medical and Biomedical Engineering

**Conference Location :** Paris, France

**Conference Dates :** April 27-28, 2015