

Feature Selection using Binary Simulated Kalman Filter for Peak Classification of EEG Signals

Badaruddin Muhammad, Mohd Falfazli Mat Jusof
Faculty of Electrical and Electronics Engineering
Universiti Malaysia Pahang
Pekan, Pahang, Malaysia
badaruddin@ump.edu.my, mfalfazli@ump.edu.my

Mohd Ibrahim Shapiai
Department of Electronic Systems Engineering
Malaysia-Japan International Institute of Technology
Universiti Teknologi Malaysia
Kuala Lumpur, Malaysia
md_ibrahim83@utm.my

Asrul Adam, Zulkifli Md Yusof, Kamil Zakwan Mohd
Azmi, Nor Hidayati Abdul Aziz, and Zuwairie Ibrahim
Faculty of Manufacturing
Universiti Malaysia Pahang
Pekan, Pahang, Malaysia
asrul@ump.edu.my, zmdyusof@ump.edu.my,
kamil_zakwan@yahoo.com.my,
hidayati.aziz@mmu.edu.my, zuwairie@ump.edu.my

Norrima Mokhtar
Applied Control and Robotics Laboratory
Department of Electrical Engineering
University of Malaya
Kuala Lumpur, Malaysia
norrimamokhtar@um.edu.my

Abstract—Previously, an angle modulated simulated Kalman filter (AMSKF) algorithm has been implemented for feature selection in peak classification of electroencephalogram (EEG) signals. The AMSKF is an extension of simulated Kalman filter (SKF) algorithm for combinatorial optimization problems. In this paper, another extension of SKF algorithm, which is called binary SKF (BSKF) algorithm, is applied for the same feature selection problem. It is found that the BSKF algorithm performed slightly better than the AMSKF algorithm.

Keywords—*simulated Kalman filter; electroencephalogram; feature selection*