World Academy of Science, Engineering and Technology International Journal of Electrical and Information Engineering Vol:9, No:10, 2015

## A Finite Memory Residual Generation Filter for Fault Detection

Authors: Pyung Soo Kim, Eung Hyuk Lee, Mun Suck Jang

**Abstract :** In the current paper, a residual generation filter with finite memory structure is proposed for fault detection. The proposed finite memory residual generation filter provides the residual by real-time filtering of fault vector using only the most recent finite observations and inputs on the window. It is shown that the residual given by the proposed residual generation filter provides the exact fault for noise-free systems. Finally, to illustrate the capability of the proposed residual generation filter, numerical examples are performed for the discretized DC motor system having the multiple sensor faults.

 $\textbf{Keywords:} \ residual \ generation \ filter, \ finite \ memory \ structure, \ kalman \ filter, \ fast \ detection$ 

Conference Title: ICISI 2015: International Conference on Instrumentation, Sensor and Interfaces

Conference Location: Prague, Czechia Conference Dates: October 05-06, 2015