Based on overall average performance from all CE detectors, it was found that the TCD detector was better than the NESPER© detector. Thus, it is recommended that the TCD detector becomes the baseline comparison detector for future algorithm development.

IV. Conclusions

This paper had provided a basic concept of activity recognition in smart buildings using the CEP approach. The experimental studies involved the use of two CEP engines, namely CAISER™ and NESPER©. Several complex event detection techniques were also used such as TCD, SWD, WSD, and NESPER©. Results showed that TCD was the best detector for complex event detection with lower time latency, higher MCC, precision value as well as higher accuracy. NESPER© was also found to be good for complex event detection. However, NESPER© is limited to exact matching technique, and the parameter is restricted. TCD is better in terms of detailing in detection rule, and the parameter is easy to vary based on the situation.

It is recommended that future research use more complex activities and standard data using similar CEP detectors such as TCD. The TCD detector could be used as a baseline detector for future algorithm development. On the other hand, the NESPER© rule can be improved by managing the EPL structure and developing the weighting function for each sub-rule. To conclude, this study believes that the research in complex event processing will proliferate as the demand for an efficient surveillance system in smart buildings increases in order to ensure stability, security, safety and a comfortable environment for society and mankind.

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