invariant to affine transformation, thus correctly represent the image that re-translated, rotated, scaled, and slanted. Its recognition performance is comparable with the Convolution Neural Network even though the implementation is still in the single-layer architecture. The trace transform feature performance could be improved by implementing the multiple layer trace transform and local feature trace transform. The current implementation with image rotation is time-consuming. Implementation using matrix multiplication for process in Graphics Processing Unit (GPU) will improve its performance and enable multilayer implementation.

ACKNOWLEDGMENT

This research fund by Fundamental Research Grant Scheme (FRGS) with code FRGS/1/2016/ICT02/UKM/01/1. The fund provides the tools to experiment with bigger memory, high-speed solid-state drive and the Graphics Processing Unit (GPU), which significantly reduces experiment running time.

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