ABSTRACT

Augmented reality is a derivative of Computer Vision that can combine the real world with the *virtual* world using cameras as the media in real time. The most fundamental of augmented reality is a 3-dimensional *object*, *marker* detection, and video streaming. *Marker* detection is the most computer resource consuming so that it can be said that the *hand* detection greatly affect the performance of augmented reality. These days augmented reality is divided into two types, *marker-based* and *marker*less augmented reality. To reduce the computational time and also improve the performance of augmented reality. The author tries to make an augmented reality application *based* on CUDA GPU Computing. CUDA is a parallel architecture made by nvidia used to maximize the capabilities that exist within the GPU for parallel computing purposes.

In this study the authors tried to analyze the performance of *interactive* augmented reality, by comparing the fps rate of the system using a CPU with GPU systems using CUDA. The author also tried to create augmented reality apps that have good performance so that its use can be maximized.

Keywords: Augmented Reality, CUDA, GPU, *Haar Classifier*, *Hand* Detection, OpenGL