

A GPU based Parallel Hierarchical Fuzzy ART Clustering

Sejun Kim, Dr. Donald Wunsch

ABSTRACT

Hierarchical clustering is an important and powerful but computationally extensive operation. This motivates the exploration of highly parallel approaches such as is available in Graphics Processing Units, as well as low-complexity algorithms such as Adaptive Resonance Theory (ART). Although ART has been implemented on GPU processors, this is the first hierarchical ART GPU implementation we are aware of. Each ART layer is distributed in the GPU multiprocessors and is trained simultaneously. The experimental results show that for deep trees, the GPU performance advantage is significant.