Parallel aggregation algorithm for human verbal and non -verbal data visualization

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Abstract. Analysis of human verbal and nonverbal behavioural features entails registration and visualization of huge amounts of data. To objectify their assessment medical, psychoanalytical and security experts require visualization of these data. In this work a model and an algorithm for verbal and nonverbal data visualization using the parallel aggregation method are researched and developed. Data chunks are simultaneously processed using the aggregation function, which is an extremum seeking function based on the updated reduction tree algorithm. This allows approaching the complexity of the overall algorithm to a minimum. We also developed software on the basis of this model and algorithm and conducted a comparative study of the throughput of a CPU and two series of a GPU: G86 and GF114. The effectiveness of using this software with these processors for high-dimensional data visualization is measured.

Keywords: data visualization, high-dimensional data, GPU, reduction tree