

ABSTRACT

A tool "Activity Diagram" is presented. It facilitates Parallel Program development by providing pre-coding visualization of the program. It finds use also in depicting and evaluating parallel algorithms.

A theory, Pipelined Data Transmission, categorizes modes of bulk data transmission to and from large numbers of processing elements in Parallel Computer Systems. New terms for the concepts were coined. The theory is developed to an extent beyond the immediate need of the thesis. The theory can readily be used by other works. The activity diagram found extensive use in illustrating the concepts.

Several algorithms for Parallel matrix Multiplication were developed and analyzed. The Amdahl's Law was tested against to ascertain validity.

A new parallel computer architecture was developed that resulted from the studies made on the algorithms.

