

# ABSTRACT

**This project is about self-routing in the fault tolerant modification of the Benes network. Benes network is a non-blocking multistage interconnection network constructed recursively from exchange elements. Fault tolerance is defined as the ability of a system to execute specified algorithms correctly regardless of hardware failures and program errors by having multiple copies of critical hardware components or subsystems. In the Benes network, there is more than one independent path for each input-output pair, so that in principle it is possible to bypass single faults and to realize any given permutation in two passes without extra stages. If the first and last stages are augmented with multiplexors and demultiplexors, then the modified Benes network will be fault tolerant to single faults. A self-routing permutation network is a connector, which can set its own switches to realize any one-to-one mapping of its inputs onto its outputs. A self-routing switch routes a message to its destination using only the information contained in the message without requiring knowledge about other connections. In this project we will implement the self-routing algorithm in fault tolerant Benes network for certain permutations.**