

## **ABSTRACT**

Dynamic bandwidth allocation is becoming one of the crucial issues in the design and research in the computer network. This is due to the continuous increasing demand of intensive applications that require more bandwidth while retaining higher quality. Dynamic bandwidth allocation utilises the current network state information to optimise the bandwidth distribution. The state information can be gathered through prediction using past data and measurement on current state. Agility and flexibility of dynamic bandwidth allocation using Neural-Fuzzy has the advantage that it can adapt to the state changes of the network. ATM network carries heterogeneous traffic and this causes the management on bandwidth to be more complex.

Neural Network and Fuzzy Logic are two fields of Artificial Intelligence, which are commonly used for solving prediction and decision-making problem. Neural-Fuzzy integration has the nature of tolerance of ambiguous and uncertainty. So, it is the most reliable method in controlling bandwidth distribution in the real ATM network environment.

The main objective of this project is to investigate the performance of the ATM network after implementing the dynamic bandwidth allocation algorithm. The Available Bit Rate (ABR) is a type of ATM service classes, in which the dynamic bandwidth allocation can be used to improve its performance.

Simulation of the traffic prediction and bandwidth re-allocation is done and compared with static bandwidth. Detailed investigation will be carried out to measure the effectiveness of the different bandwidth re-allocation methods.