Success does not mean the absence of failures; it means the attainments of ultimate objectives. It means winning the war not every battle.

- Edwin C. Bliss

To achieve the goal devotion is necessary. Those who have neither the determination to succeed nor the willingness to devote the time and efforts necessary to achieve success can never get success in life.

The work in thesis has discovered the unseen and undid areas of routing optimization in computer networks, which will be helpful for future researchers. The work describes how a number of metrics can be taken together to find an optimal path from source to destination using adaptive and intelligent approach. It also describes how MATLAB tool can be used to develop simulators, to test the complex scenarios. The thesis will help the readers in understanding the MATLAB as a research tool as well as how intelligent approach like Genetic Algorithm can be used in routing optimization. By the time reader will finish the reading, there will be new action plan in mind to win the war of study.

Organization of thesis:

Chapter 1 introduces all the concepts of routing in packets switched networks. All the inter-domain and intra-domain routing protocols are discussed. The network design and routing of packets are the major areas that influence the performance of the network. To optimize these areas various mathematical and intelligent optimization techniques are discussed.

Chapter 2 introduces the Genetic Algorithm as an optimization tool. Among evolutionary algorithms, Genetic Algorithm is most popular optimization technique for multi-objective optimization problems.

Chapter 3 describes the problem statement and methodology used.

Chapter 4 gives the literature survey. Literature survey is made on basis of various areas in communication network where intelligent approaches are used. The description of work carried by early researchers is made on year basis.

Chapter 5 describes the implementation of Genetic Algorithm for finding the optimal path. The MATLAB tool is used to develop the simulator. The delay metric is considered for finding the shortest path using GA variant.
Chapter 6 and chapter 7 describe more GA variants for various selection and crossover methods like 1-point, 2-point, adaptive etc. The Simulator is developed using MATLAB and tested for various inputs. A comparison of research work is also carried with Dijkstra algorithm.

Chapter 8 concludes the work and Appendix-1 describes the simulator developed using MATLAB.