PREFACE

This Doctoral Thesis entitled "HALF LOGISTIC SOFTWARE RELIABILITY GROWTH MODEL" is taken up at the instance of Dr.P.Thrimurthy, Professor of Computer Science and Dr.R.R.L.Kantam, Professor of Statistics, Acharya Nagarjuna University, motivated by a desire to study some problems of software reliability prediction and analysis when the random phenomenon in a software failure data is proposed to be explained by a non-homogeneous Poisson process (NHPP) with a recently introduced life testing probability model-half logistic distribution as mean value function. The proposed NHPP is derived with a specified relation between the mean value function and intensity function of a general NHPP in a way parallel to and in between two popular Software reliability models-(i) due to Goel and Okumoto (1979) (Finite failure model) and (ii) due to Musa and Okumoto (1984) (infinite failure model).

Chapter 1 is on software reliability preliminaries with exhaustive literature relevant to the proposed study. Problems of reliability prediction and the predictive capacity of our model when the software failure data is in the form of inter failure times are studied and the results are presented in Chapter 2. Reliability analysis and associated model evaluation for software failure data in the form of failure count are discussed in Chapter 3. Pooled combination of models with appropriate weight factors that include our proposed model and its competitors are evaluated with respect to various measures of preferability in Chapter 4. Detection of unreliable software components with the application of sequential probability ratio test (SPRT) procedure to our proposed model and its competitors is studied in Chapter 5.

The listings of the software developed are enclosed at the end of respective chapters. Numerical tables obtained for the sake of comparison are presented at the appropriate places of comparison. List of references arranged alphabetically are given towards the end of the thesis.