PREFACE

This thesis is being submitted in fulfillment of the primary requirement for the degree of Doctor of Philosophy in Science of the University of Calcutta.

Early in the process of completing this dissertation, it became quite clear to me that a researcher cannot complete a Ph.D. thesis alone. Although the list of individuals I wish to thank extends beyond the limits of this format, I would like to thank everyone who in one way or another contributed to this thesis. There are some people to whom I am deeply indebted for their help in the process that ends with this Ph.D. dissertation. I take this opportunity to acknowledge their never faltering encouragement and support.

The work leading to this dissertation has been carried out under the direct supervision of Dr. Uttam Bandyopadhyay, Professor, Department of Statistics, University of Calcutta. I would like to record my gratitude to our venerated teacher Prof. Bandyopadhyay for his supervision, advice and guidance from the very early stage of this research as well as giving me extraordinary experiences throughout the work. It is a matter of pride to admit that I have received his invaluable attachment since my exposure with mainframe Statistics at the Department of Statistics, University of Calcutta. Since then his continuous inspiration, good advice, dynamic foresight and great efforts to explain things clearly and simply make me very enthusiastic in the subject. Whilst the sensation of doing something that would impress everybody was short-lived, those first few days of uncertainty that he pulled with me are ones that I will not ever forget. His ability to probe beneath the text is a true gift, and his insights have strengthened this study significantly.

I am grateful to the Department of Statistics of Calcutta University and to my respected teachers of this department for their valuable offerings in acquiring knowl-

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The most important part of a Ph.D. is writing papers, therefore I would like to acknowledge anonymous reviewers of the papers for their useful suggestions and corrections.

I would not be sitting in front of my monitor typing these acknowledgment lines without my parents and family. They have always put education as a first priority in my life and raised me to set high goals for myself. I have always needed to work hard to achieve my goals in life and they have always been there for me as an unwavering support. They are the reason I did this, they are the reason I thrive to be better. I dedicate this work to them, to honour their love, patience and support during these years.

I deeply regret if there are any errors of unintended omissions and commissions.

KOLKATA
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