## **ACKNOWLEDGEMENTS**

With immense joy and gratitude, I reflect on my Ph.D. journey, a dream that transformed into reality through the unwavering support and contributions of numerous individuals. In acknowledging their pivotal roles, I extend my heartfelt thanks to:

First and foremost, my mentor, Prof. N. S. R. Krishnayya, Head of the Botany Department, for his unwavering support, invaluable guidance, motivation and blessings throughout my research journey. His mentorship has been instrumental in shaping this work and I am truly grateful for the opportunity to learn from him. His dedication to reading, research, and punctuality has consistently inspired me. I also want to express special thanks to him for providing exceptional laboratory facilities, contributing significantly to the quality of my research.

I am also thankful to Prof. (Mrs.) Sandhya K. Garge (Former Head, Department of Botany) for providing various facilities during the course of my study. My gratitude extends to all the teachers of the Department of Botany from whom I learned. I would not have been here without their guidance, blessing, and support.

I am deeply grateful to the Department of Science and Technology, Government of India, and the SAC-ISRO, Ahmedabad, for providing financial support to carry out this work.

Heartfelt thanks to NASA and SAC-ISRO for providing processed AVIRIS-NG imagery, a crucial element in the flawless completion of the project. I am also sincerely grateful to Dr. Prashanth Marpu for assisting me in learning hyperspectral data processing in ENVI.

I am thankful to Mr. Hasmukh Shrimali for handling accounting responsibilities. I appreciate the non-teaching staff of the department for their kind help and cooperation.

Special thanks to the Principal Chief Conservator of Forests, Wildlife, Gujarat State, Gandhinagar, for granting permission for research work in protected areas. I extend gratitude to the forest department and the dedicated field assistants who provided invaluable support during the data collection. Additionally, I express my thanks to Dr. Jitendra Gavali for assisting in the identification of tree species.

To my lab mates, thank you for fostering a collaborative and enjoyable work environment. Special mention deserves two of my colleagues: Mr. Maulik Dave, for his generosity, incomparable moral support, and unwavering assistance throughout my academic journey, and Ms. Reshma Parmar, for consistently supporting me in all my activities and offering invaluable help during my ups and downs. I feel fortunate to have both of them not just as colleagues but also as friends and co-authors, integral contributors to my overall happiness and success. In addition to them, I extend sincere thanks to my seniors, Dr. Nirav Mehta (a good soul in heaven), Dr. Sheshakumar Goroshi, and Mrs. Rashmi Solanki, as well as my junior, Ms. Dhruvi Phadke, for their valuable support, guidance and encouragement.

The M. S. University of Baroda deserves thanks for providing outstanding hostel facilities, contributing to a favourable environment for study. My heartfelt appreciation goes to my roommates and friends — Kopal, Pravina, Nisha, Kinal, Arohi, Kulbir, Priyanka, Pooja, and Swati, who created a homely atmosphere during my entire academic journey, shared happy moments, and always helped me. Special thanks to Dr. Chhavi Di, who consistently supported, encouraged, and inspired me.

Words are insufficient to express my debt of gratitude to my beloved family for being immensely supportive, loving, and caring. I will always be grateful for the infinite blessings from my grandparents. My heartfelt thanks to my parents (Mr. Nandlal Chaurasia, and Mrs. Mandila Chaurasia) for their unwavering faith, blessings, and understanding. Their patience and belief in my abilities were a constant source of motivation. This thesis is dedicated to my mummy in heaven. I am privileged to thank my brothers (Mr. Parmeshwar Chaurasia and Mr. Pradhuman Chaurasia), and sister (Mrs. Reena Chaurasia) for their fortitude and support. It is because of the support of my mother and brothers that I could reach this milestone. I am thankful to Simrun Di (a good soul in heaven), for encouraging me to pursue a college education. I am grateful to my sisters-in-law (Pinky and Rani Bhabhi), nieces (Anshu, Aditi, and Tonisha), nephew (Nuvansh), and all cousins for being part of my joyous moments. The constant support, care, love, infinite patience, and continuous encouragement from my family members have made this work possible.

Finally, I acknowledge the Almighty for providing the opportunity, strength, patience, and blessings throughout this journey. I am grateful for the highs and lows that molded me into a stronger version of myself.

In conclusion, my sincere appreciation to everyone who, directly or indirectly, contributed to the completion of this thesis. Your support has been invaluable, and I am genuinely grateful for the collaborative spirit that defines this achievement.

Chaurasia Amrita Nandlal