

Preface

Even though it's a lovely and peaceful natural occurrence, snowfall may cause major disruptions, particularly in areas that receive a lot of it. Removing snow from roads and public areas quickly and effectively is essential to ensuring public safety and minimising disruptions to everyday life. The goal of this project is to use cutting-edge technology like Geographic Information Systems (GIS) and Global Positioning Systems (GPS) to address the difficulties associated with tracking and clearing snow.

This endeavour is primarily driven by the goal of increasing operational effectiveness and public safety in regions that frequently experience snowfall. I have seen firsthand how harsh winters affect infrastructure and transit over the years. These encounters have motivated me to look into creative ways to lessen the difficulties involved in snow removal.

It has taken a team to complete this project, and I sincerely thank everyone who has helped. I want to sincerely thank my mentors for their crucial advice and encouragement along this trip. A special thank you to my coworkers, whose suggestions and knowledge greatly improved this job. I am also grateful for the assistance I received from Symbiosis Institute of Geoinformatics, which furnished the facilities and resources I needed. This project's development wasn't without some difficulties. The intrinsic unreliability of GPS data, which can result in inaccurate lane tracking, was one major obstacle. We have created advanced algorithms to improve GPS accuracy, anticipate human movements, and navigate intricate road networks through considerable research and experimentation.

This introduction provides context for the extensive work that follows. The chapters are set up to offer a thorough examination of the instruments and programmes created for tracking and snow removal. From data collecting to system design to algorithm development and real-time tracking, each component explores a certain facet.

It is my hope that this work will serve as a catalyst for more research in this area and enhance the current efforts to improve snow clearance operations. My objective is to offer significant perspectives that can improve snow management efficiency and safety by showcasing inventive approaches and useful implementations.