**Acknowledgements**

I would like to express my gratitude to all those who accompanied me during this important part of my life.

To my family for shaping me into the persistent, dedicated and creative person I am today, traits that allowed me to pursue this unconventional theme.

To all my good friends, for the fun, the good moments and for the unforgettable memories we shared during the last five years.

To Professor José Miguel Castro for accompanying me, first as a professor and later as the supervisor of this dissertation, for sharing this passion for technology and for providing me with useful technical feedback.

To Engineer Luis Macedo for the knowledgeable insights provided about Machine Learning and Genetic Algorithms.

To the industry partners at Megalogalva, Engineers Hélder Costa and Rui Cunha, for the useful technical input provided and interest demonstrated.

To my mentor, James Parker, and everyone at Expedition Engineering, where I worked with extremely talented engineers, and where I got immersed an environment that encouraged innovation and creativity and that ultimately helped me arrive at the theme of this dissertation.