## **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 helped 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 and personal advice.

To Engineer Luis Macedo for the knowledgeable insights provided about Machine Learning and optimization algorithms.

To the industry partners at Metalogalva, Engineers Rui Cunha and Hélder Costa, 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 got immersed in an environment that encouraged innovation and creativity that ultimately helped me arrive at the theme of this dissertation.