



Universidade do Minho

Final Report

Radio Frequency Camera Assisted Rover (RFCAR)

Master Degree in Industrial and Computer Electronics Engineering

Laboratórios e Práticas Integradas 2

Integrator Project

Group 7

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Chapter 1

Introduction

The envisioned product consists of a remote controlled car used to assist exploration and maintenance domains, hereby, denominated as Radio Frequency Camera Assisted Rover (RFCAR). To satisfy such requirements, the vehicle must contain a remotely operated camera that provides a live video feed to the user. Additionally, the vehicle must include an odometric system that assists the driving and avoids unintentional collisions when remote control is compromised, e.g., when connection is lost. The vehicle provides means for exploration and conditions assessment in critical or inaccessible areas to human operators, such as fluid pipelines and other hazardous locations. The goal of the present work is to close the gap between design and fabrication of multi-material components from metallic/ceramic materials using *Selective Laser Sintering (SLS)*/*Selective Laser Melting (SLM)* technology. To this end several main objectives have been outlined:

Chapter 2

State of the Art

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Chapter 3

Analysis

The envisioned product consists of a remote controlled car used to assist exploration and maintenance domains, hereby, denominated as Radio Frequency Camera Assisted Rover (RFCAR). To satisfy such requirements, the vehicle must contain a remotely operated camera that provides a live video feed to the user. Additionally, the vehicle must include an odometric system that assists the driving and avoids unintentional collisions when remote control is compromised, e.g., when connection is lost. The vehicle provides means for exploration and conditions assessment in critical or unaccessible areas to human operators, such as fluid pipelines and other hazardous locations.

Chapter 4

Design

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Chapter 5

Implementation

The envisioned product consists of a remote controlled car used to assist exploration and maintenance domains, hereby, denominated as Radio Frequency Camera Assisted Rover (RFCAR). To satisfy such requirements, the vehicle must contain a remotely operated camera that provides a live video feed to the user. Additionally, the vehicle must include an odometric system that assists the driving and avoids unintentional collisions when remote control is compromised, e.g., when connection is lost. The vehicle provides means for exploration and conditions assessment in critical or unaccessible areas to human operators, such as fluid pipelines and other hazardous locations.

Chapter 6

Testing

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Chapter 7

Verification and Validation

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Chapter 8

Conclusions

The envisioned product consists of a remote controlled car used to assist exploration and maintenance domains, hereby, denominated as Radio Frequency Camera Assisted Rover (RFCAR). To satisfy such requirements, the vehicle must contain a remotely operated camera that provides a live video feed to the user. Additionally, the vehicle must include an odometric system that assists the driving and avoids unintentional collisions when remote control is compromised, e.g., when connection is lost. The vehicle provides means for exploration and conditions assessment in critical or unaccessible areas to human operators, such as fluid pipelines and other hazardous locations.

Chapter 9

Final product

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Appendices