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TBD

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Abstract

Your abstract goes here

Acknowledgements

Thanks mum!

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Introduction

1.1 Objectives

1.2 Challenges

1.3 Contributions

Chapter 2

Background

This chapter will provide the theoretical background for this thesis. First we will discuss the field of multi-robot systems, providing the reader with an understanding of how the field has evolved and how it may further evolve. Next we examine RobotWeb [1], the research that this thesis seeks to build upon. Finally, we discuss various security issues present in the field to arrive at the research question for this thesis.

2.1 Multi-Robot Systems

The study of multi-robot systems concerns itself with studying how to allow multiple robots to operate in the same environment. Multi-robot systems have several advantages over single-robot systems; they are more effective, efficient, flexible and resilient [2]. These robots can behave competitively or collaboratively, coordinate statically or dynamically, communicate explicitly or implicitly, consist of homogeneous or heterogeneous robots and make decisions centrally or decentrally [3].

2.1.1 Competitive vs Collaborative Behavior

Multiple robots which share a common goal are considered to be behaving collaboratively, whereas if each robot aimed to complete its own goal at the expense of all others, it would be said to be behaving competitively [3]. Examples of collaboration range from teams of robots constructing a habitat

2.1.2 Static vs Dynamic Coordination

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2.1.3 Explicit vs Implicit Communication

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2.1.4 Homogenous vs Heterogenous Robots

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2.1.5 Centralised vs Decentralised Decision Making

...

What's left (not just security)

2.2 Robot Web

2.2.1 Factor Graphs

2.2.2 Gaussian Belief Propagation

2.2.3 Lie Theory

2.2.4 Putting it all together

2.3 Security Issues

2.3.1 Byzantine fault tolerance

2.3.2 Masquerade Attacks

2.3.3 Sybil Attacks

Chapter 3

Related Work

3.1 Wifi Scattering

3.1.1 Paper 1 - Gil et al.

3.1.2 Paper 2 - Huang et al.

3.2 Proof of Work

3.2.1 Paper series 1 - Gupta et al.

3.2.2 Paper series 2 - Strobel et al.

3.3 ARP poisoning defenses

3.4 DDoS Attacks

Chapter 4

PROJECT X

Chapter 5

Evaluation

Chapter 6

Conclusion

Appendix A

First Appendix

Bibliography

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