



Project Title:	Immune Systems Inspired Multi-robot Cooperation
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Project Description:

One of the main issues being studied in Multi-Robot System is cooperation between mobile and autonomous robots in order to achieve a common goal or to maximize the utility for each agent. Robots can also be viewed as agents, specifically embodied agents situated in the physical world. Effective cooperation entails that the total utility of the system is increased, but at the same time the goal of each single agent is not totally abandoned or delayed too long.

The problem this research is trying to address is the use of an effective algorithm for cooperation of different robots in a team to achieve its design objectives. This problem has indeed been studied by many researchers either in the robotics area or in the Multi-Agent Systems area. However, few of these studies are looking at biologically-inspired algorithms in approaching the problem. Little research is done in utilizing the Immune Systems as a metaphor for cooperation in the robot/agent teams.

Biological immune systems are evident in the emergent cooperative behaviour of the virus-fighting cells in the body. Therefore, the research problem of this study is the use of immunology-based algorithm in achieving adaptive cooperation in a group of heterogeneous robots. Furthermore, interactions between heterogeneous robots in relevant scenarios are also investigated because of its wide applicability in the real world.