

Report 2 – Identifying your project topic

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Project Topic Discussion & Security Problem

During my research, it was difficult to find actual implementations of cybersecurity problems in robotics, specifically in multi-agent robotics. However, there were a few papers that discussed communication between multi-agent and multi-robotic systems. In swarm robotics, where there are dozens to hundreds of robots communicating with each other for instructions, the robots communicate directly with each other and often in a decentralized manner. This leads them to be vulnerable to interception, detection, and attacks. While not a perfect example of this, a drone-show at Disney Springs in Orlando, FL had an incident where a handful of drones malfunctioned due to a launch error that caused the drones to launch late and crash into other drones which then crashed onto observers injuring one child. This was an accident due to a technical error but can easily be used to showcase the impact of a purposeful attack on a swarm robotic system. A solution to defend these swarm robotics systems from attacks is through encryption.

Next Phase Plan

The next phase of the project would be to research more to define a more specific project and look into tools and software to practice encryption methods. This would be my first attempt in recreating this type of project where the goal is to not only create a multi-robot routine but create a solution to prevent cyberattacks. A simulation software called Unity and their robotics and machine learning package called Unity ML-Agent could be a good use for this. This would be a good source as it can be used on multiple devices to practice on.

Reference Papers

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