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Abstract

The objective of this project is to develop and test combat drone swarm algorithms using scrum methodology. The group first developed a simulation harness with customizable parameters including environmental obstacles, swarm size, and window size. Drones also contained adjustable attributes including speed, weaponry, and sensor capabilities. The group then split into smaller algorithm development teams. Each team worked to develop combat swarming algorithms to compete against other teams at the conclusion of each sprint. These algorithms differed from each other in techniques such as movement of both individual drones within the swarm as well as the swarm as a whole, and interaction with enemy drones. The algorithms were pitted against each other within the simulation harness for analysis. Results of these simulations were documented using videos and screenshots during the simulation. These materials were used to analyze and improve future algorithms, allowing the teams to continually refine and improve drone and swarm behavior. Overall, the group was able to develop useful and effective combat swarming algorithms using this process.