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Abstract

This combat swarm project developed and tested combat drone swarm algorithms, implementing randomized simulations of prevalent combat swarm algorithms in literature, while developing novel algorithms through team competition. A drone simulation harness allowed customizable parameters including environmental obstacles and swarm size. The harness is able to simulate various drone types through adjustable class attributes including speed, weaponry, and sensor capabilities. Two teams worked to develop competing combat swarming algorithms, evaluated by average success rate in the drone simulation harness. Results of these simulations were documented using video, screenshots, and flight path records during the simulation. These artifacts were used to analyze and improve current state-of-the-art algorithms and to refine and improve drone and swarm behavior. Overall, the group was able to develop useful and effective combat swarming algorithms using this process.