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T1 _____
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Team Control Number
1908684

Problem Chosen
B

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2019

MCM/ICM
Summary Sheet
(Your team's summary should be included as the first page of your electronic submission.)
Type a summary of your results on this page. Do not include the name of your school, advisor, or team members on this page.

After the hurricane Maria hitting Puerto Rico, an NGO is attempting to take part in disaster relief by sending a drone fleet. The drones can help with medical supply delivery and video reconnaissance. However, only a limited number of drones and medical packages can be sent to the island due to the limitation of transportation capability. To deliver medical packages and take video of the major roads as best we can, picking a proper drone fleet and set of medical packages and making an optimized flight route are very important. This paper aims to deal with the problem of how to form the proper the drone fleet and set of medical packages, as well as where to send them. In addition, corresponding packing configuration for each ISO, drone payload packaging configuration and flight routes are provided.

Our approach are composed of three steps:

(1) Using saving algorithm to find the optimal route schedule for a fixed container in a fixed location;

(2) Using dynamic programming to find the optimal selection of cargoes in container in the fixed location;

(3) Searching globally for three points to release the containers.

Finally, with our model we can make decisions on what to be packed in our containers, where to settle our containers and how our drones schedule its delivery routes.