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Austin Flood Practical Drone Usage

Dr. Aceves

REU Practical Thinking Exercise

### **Rescue & Infrastructure Damage Assessment Drone Network:**

In response to the recent floods in Austin, Texas, I believe that drones could play a critical role in disaster response and recovery. After a while of research, and recollection of my thoughts in relation to the disaster, I would propose that deploying a coordinated swarm of drones, connected to the same neural network, in order to assess infrastructure damage, and locate stranded individuals using real time image processes and object detection would be the best case use for the drones. In my proposition, each drone would be equipped with high resolution cameras, LiDAR, and thermal sensors, wherein the entire swarm would fly over the flooded areas, processing real-time images, and detecting human heat signatures, instantly reporting all findings to emergency personnel. All imagery coming from the drones cameras would be processed by an AI model, trained on Aidar datasets, in order to identify blocked/collapsed roads, faulty bridges, and high trap risk areas, which would allow first responders to prioritize their efforts, and optimize their results. Finally, each drone could also contain a small payload of essential supplies like radius, water or floatation devices to further increase their return, and ability to remedy any emergency situation it encounters.