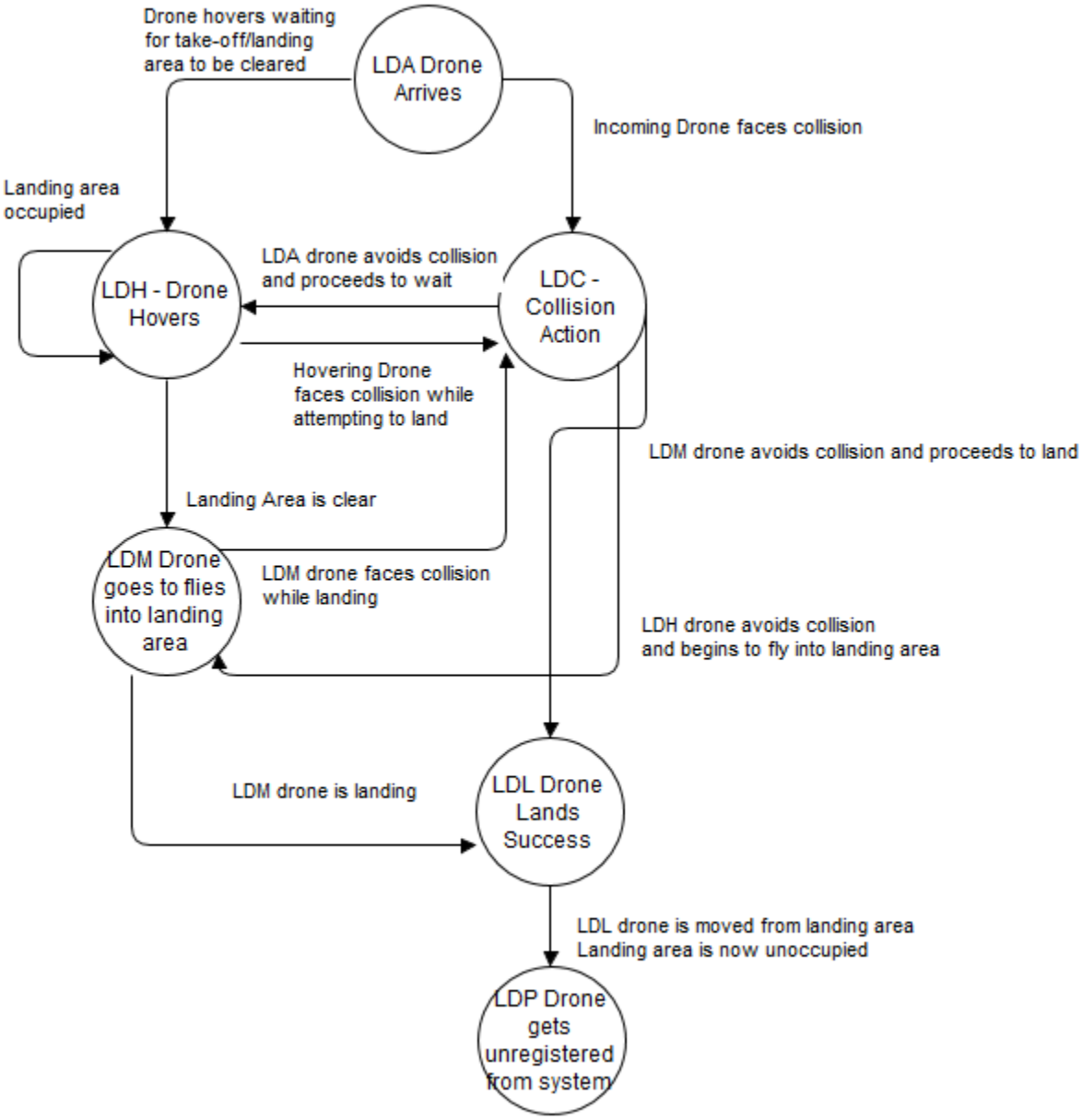
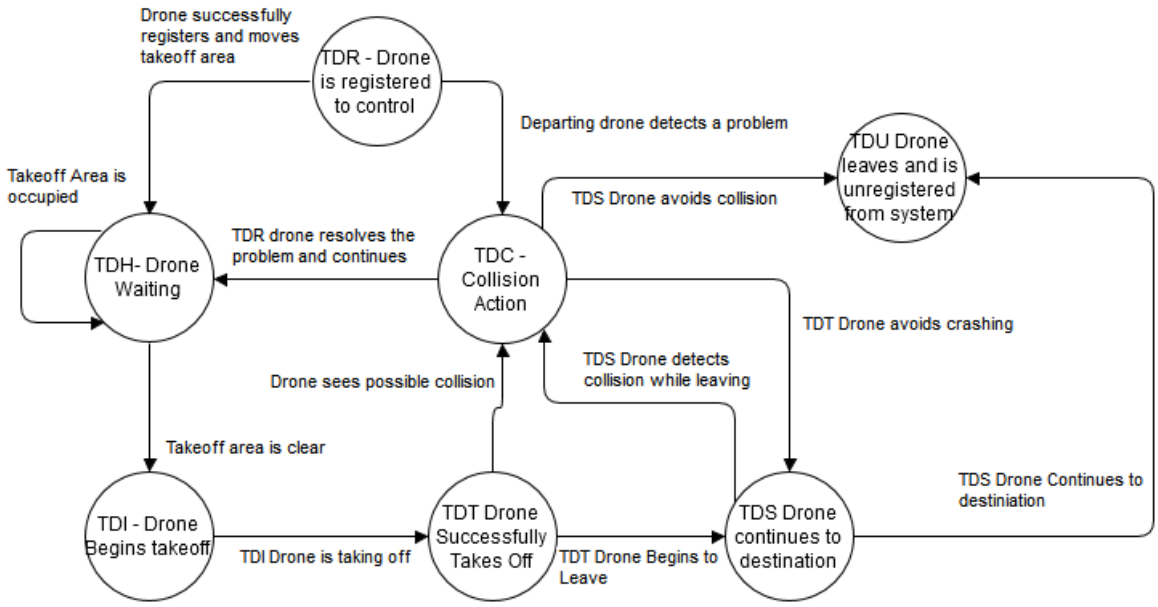
Jules Manalang 50010031 CSE321 Project 1
DECOY

Objectives: To create software so that drones will not collide with each other at landing stations. It must be able to handle many drones both incoming and waiting to take off from a station or multiple stations.

Finite State Diagram: Drone Landing



Finite State Diagram: Drone Takeoff



Details

In this section, details and definitions are clarified. For this system, both takeoff and landing areas are the same meaning only 1 drone can land or take off at any given time. This is controlled using a semaphore to make the landing area occupied at that moment. This happens when a drone is about to land or take off and claims the area making it occupied. Once the drone has moved away from the landing area or has taken off completely, the area is considered unoccupied.

Collisions happen 1/10 of the time but since the drones have collision detection and the measures to avoid them, no drones end their life cycle at due to a collision. It just selects a random number from 1 to 10 and checks if it's 5. Originally it was 1% chance of collision but it wasn't registering collisions as often as one would like to see if the drone can handle it.

Landing Definitions:

LDA – Drone arrives at station and is registered with the system.

LDH – Drone hovers until the landing area is clear

LDM – Drone is flying into the clear landing area and registers that the landing area is occupied

LDL – Drone has landed and being moved into a receiving area.

LDP – Drone has successfully left the landing area and is no longer occupied and unregistered from the system

LDC – Drone detects a collision

COM – Drone has completed its life cycle

Departing definitions:

TDR - Departing drone registers with control

TDH - Departing drone waits until takeoff area is unoccupied

TDI - Departing drone initializes for take off

TDT - Departing drone takes off

TDS - Departing drone successfully takes off and is leaving

TDU - Departing drone leaves control and is unregistered

TDC - Departing drone assesses collisions

DON - Departing drone completes its life cycle