

# Drone Simulation System

## **Team 25**

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# Feature 1 - Notifications

- Scrollable text bar
  - Receives events from backend
- Notifications from all entities
  - Comprehensive information
  - Easier debugging
- Observer pattern
  - Open to extension

```
"Human-OG" is on the way to {459.13, 270.00, -108.87}
"Drone" is on the way to pick up "Robot 3"
"Drone" is on the way to pick up "Robot 2"
"Human-8" is on the way to {879.40, 290.00, -308.06}
"Drone" has picked up "Robot 3"
"Drone" is delivering "Robot 3" using dijkstra strategy
"Human-6" has arrived, generating new destination
"Human-6" is on the way to {213.68, 264.00, -133.59}
"Drone" has picked up "Robot 2"
"Drone" is delivering "Robot 2" using dfs strategy
"Human-OG" has arrived, generating new destination
"Human-OG" is on the way to {-908.13, 264.00, 650.88}
"Drone" has dropped off "Robot 2"
"Drone" is on the way to pick up "Robot 1"
"Drone" has picked up "Robot 1"
"Drone" is delivering "Robot 1" using astar strategy
"Drone" has dropped off "Robot 3"
"Drone" has dropped off "Robot 1"
"Human-OG" has arrived, generating new destination
"Human-OG" is on the way to {295.01, 264.00, -408.93}
"Human-8" has arrived, generating new destination
"Human-8" is on the way to {-1036.12, 264.00, 469.55}
"Human-6" has arrived, generating new destination
"Human-6" is on the way to {-1183.86, 264.00, 720.16}
"Human-3" has arrived, generating new destination
"Human-3" is on the way to {-1247.66, 264.00, 34.50}
"Human-OG" has arrived, generating new destination
"Human-OG" is on the way to {504.03, 264.00, 747.84}
"Human-1" has arrived, generating new destination
"Human-1" is on the way to {-1197.27, 264.00, -472.55}
"Human-4" has arrived, generating new destination
```



## Feature 2 - Data Collection

- Singleton pattern
  - Shared access of data collection class between entities
- Collects data on drones and robots throughout the simulation
  - type, id, position, destination, speed, available, pickedUp, delivered, strategy, totalTime
- Exports data as CSV
- Includes script to find longest time a robot had to wait for it's trip
- Allows user to create an experiment with desired amount of Drones, Robots, and search strategy
- Further analysis from data possible
  - Find minimum number of drones needed for X robots, while minimizing time to get them to their destination

Demonstration