# Objective Function for Drone Simulation

The objective function evaluates the performance of drones in detecting oil spills while penalizing excessive battery usage. It is defined as follows:

Objective Function:  
 Φ = R\_{detect} - β ⋅ P\_{battery}  
  
Where:  
 • R\_{detect} = ∑\_{i=1}^{n} oil\_detected\_i  
 - Total oil detections made by the n drones.  
 • P\_{battery} = ∑\_{i=1}^{n} (100 - battery\_i)  
 - Total battery consumption for all drones.  
 • β: Weight parameter to balance the penalty for battery usage.  
 • Φ: The overall objective value to optimize.  
  
The goal is to maximize Φ by ensuring efficient oil detection while minimizing resource wastage.