Drone Simulation Project

Specifications:

3D Library: Unity

Compulsory part

- Communication between SARL and Unity
- 3D environment
    - Tree base modelling
    - Very basic graphics
    - Walls
    - Trees
    - Perception
    - Manage two things happening at the same time
- Wind
    - Fluctuating wind map
    - Compensation from drone AI
- Drone (at least one)
    - Collision avoidance (=> convex consideration)
    - Moves
    - Shortest path to an objective (rather simple algorithm)
- GUI
    - Top/corner view to visualize the entire map
    - Visualization of the objective

<u>Facultative part</u>

- Substances
    - Oil to be able to fly
    - Speed boosts
    - Different boosts (wind immunity, wall crossing, ...)
- 3D environment
    - Destroyable objects (windows, leafs, ...)
    - Moving objects (flags, birds, ...)
- Wind
    - Taking environment into consideration (i.e. no wind behind a wall)
    - Consider drone properties (surface, aero dynamism)
- Drone
    - Collision avoidance (=> exact consideration)
    - Multiple drone
    - Machine-learning
    - Properties (weight, speed, acceleration)
    - Ability to shoot
    - Decomposition into mechanical parts (actuators, branches, brain)
    - Better shortest path algorithm
    - Map composition
- GUI
    - Camera following/inside the drone
    - Multi-screen
    - Better graphics
- Other
    - Race mode
    - Flag mode
    - Possibility for the player to drive a drone