Project Planning

# Necessary Functionality

1. Program on start preloads a preconfigured machine learning algorithm that has been developed and tested
2. Graphical user interface displays which starts from a main menu where the user can select the difficulty of the enemy
3. On game start the user and enemy have a base, a builder unit, and an infantry unit
4. Game plays with functions
   1. Creation
      1. Make a base
      2. Make an oil refinery
      3. Make a builder
      4. Make a logi truck
      5. Make a factory
      6. Make a shipyard
      7. Make a barracks
      8. Make an airport
      9. Make a garage
      10. Make a watchtower
          1. Location
      11. Make a soldier type unit
      12. Make a tank
      13. Make a plane
      14. Make a ship
      15. Make mines
      16. Make a vehicle
          1. Location
          2. Type
      17. Make a bunker
      18. Make a trench
      19. Make barbed wire
      20. Make tank traps
          1. Location
          2. NESW
   2. Upgrades
      1. Upgrade a base
      2. Upgrade an oil refinery
      3. Upgrade a factory
      4. Upgrade a shipyard
      5. Upgrade a barracks
      6. Upgrade an airport
      7. Upgrade a garage
      8. Upgrade a watchtower (only health)
         1. Location
      9. Upgrade a bunker
      10. Upgrade a trench (less chance of taking damage for infantry, more hp)
          1. Location
          2. NESW
      11. Auto upgrade a builder
      12. Auto upgrade a logi truck
      13. Auto upgrade a soldier type unit
      14. Auto upgrade a tank
      15. Auto upgrade a plane
      16. Auto upgrade a ship
   3. Builder Orders
      1. Repair building
         1. Location
         2. Type
         3. NESW
      2. Harvest a resource
         1. Type
         2. Location
      3. Attack something
         1. Name
         2. Type
         3. Location
      4. Move somewhere/in something
         1. Location
         2. Type
         3. NESW
      5. Retreat
         1. Location
      6. Remove mines
      7. Remove barbed wire
      8. Remove tank traps
         1. Location
   4. Infantry Orders
      1. Attack something (can attack mines lol)
         1. Name
         2. Type
         3. Location
      2. Throw grenade
         1. Location
         2. Type (of grenade)
      3. Move somewhere/in something
         1. Location
         2. Type
         3. NESW
      4. Retreat
         1. Location
   5. Attack Vehicle Orders
      1. Attack something (can attack mines, defenses and buildings but not tank traps)
         1. Name
         2. Type
         3. Location
      2. Move somewhere
         1. Location
         2. Type
         3. NESW
      3. Retreat
         1. Location
   6. Vehicle
      1. Move somewhere
         1. Location
         2. Type
         3. NESW
      2. Retreat
         1. Location
   7. Research
      1. Type
   8. Deletion
      1. Destroy a base
      2. Destroy an oil refinery
      3. Destroy a builder
      4. Destroy a logi truck
      5. Destroy a factory
      6. Destroy a shipyard
      7. Destroy a barracks
      8. Destroy an airport
      9. Destroy a garage
      10. Destroy a watchtower
          1. Location
      11. Destroy a soldier type unit
      12. Destroy a tank
      13. Destroy a plane
      14. Destroy a ship
      15. Destroy mines
      16. Destroy a vehicle
          1. Location
          2. Type
      17. Destroy a bunker
      18. Destroy a trench
      19. Destroy barbed wire
      20. Destroy tank traps
          1. Location
          2. NESW

# Project Architecture

* View-Controller
  + Where the message loop is and all input is received
  + Displays all graphical interface to the user
  + Communicates with the model
* Model
  + Contains the machine learning algo
  + Stores the lists of classes and the behind the scenes board
  + Interprets all input
  + Functions:
    - FindGameObject(Name, Location, Type, NESW)
    - Attack(ObjectID Giver, ObjectID Receiver, Location)
    - ThrowGrenade(ObjectID Giver, ObjectID Receiver, Location)
    - Repair(ObjectID Giver, ObjectID Receiver)
    - Make(ObjectID Giver, TypeID Receiver)
    - Remove(ObjectID Giver, ObjectID Receiver)
    - Harvest(ObjectID Giver, TypeID Receiver)
    - Build(ObjectID Giver)
    - Survey(ObjectID Giver)
* GameObject
  + Vars
    - ObjectID // Unique ID to identify specific instance of object
    - TypeID // Non-unique ID to identify type of object
    - Location // 3 int type
  + Functions:
    - Create(Location)
    - Destroy()
  + Building
    - Vars
      * HP
    - Functions
      * Upgrade()
      * Die()
    - Bunker
    - Trench
    - Watchtower
      * Vars
        + EnemyList
      * Functions
        + AddEnemy
    - Creators
      * Base
      * Factory
      * OilRefinery
      * Shipyard
      * Barracks
      * Airport
      * Garage
    - DefensiveBuilding
      * Vars
        + DPS
        + Range
      * Mines
      * BarbedWire
      * TankTrap
  + Unit
    - Vars
      * HP // All vars vary on unit
      * EXP
      * SPD
      * DPS
    - Functions
      * Move(Location, NESW)
      * LevelUp()
      * Retreat()
    - Builder
    - Truck
    - Soldier
    - Tank
    - Plane
    - Ship
    - Mines
    - Vehicle