**Structura documentatie licenta**

1 Introducere

- motivatie

- comportament

2 Aplicatii similare

* intro why ml in videogames-
* DeepLearning-
  + AlphaGo & AlphaGoZero-
  + Starcraft: Alphastar-
  + dota2: open AI-
* Computer vision-based -
  + Pong-
  + Doom-
* Procedural content generation -
  + Galactic Arms Race-

3 Implementare

* Unity short intro-
* **Used Technologies**
  + Unity-
  + C#-
    - C# Bult-in types
      * Int--
      * Bool-
      * Float
      * double
      * String
    - C# code structures
      * If
      * Switch case
      * For
      * While
    - C# Namespaces
      * UnityEngine
        + GameObject
        + BoxCollider2D
        + Rigidbody2D
        + Vector2
        + Vector3
        + Color
        + Input
      * UnityEngine.Tilemaps
        + TileBase
      * System
        + String.Split
        + Math
      * System.IO
        + StreamReader
        + SteamWriter
      * System.Collections.Generic
        + List
        + Dictionary
        + HashSet
        + KeyValuePair
      * System.Random
        + .Random()
* Adversary AI-
  + K-means clustering algorithm-
    - K-means expenation-
    - Vision radius-
    - Point saving-
    - Point loading
    - Clusterising
    - NavGoal
    - Problems and solutions:
      * …
      * …
  + A star algorithm;
    - Building the graph as is searches
    - Cheching for walls
    - Stoping condition
  + Movement
    - Player input
    - Get new coordinates
    - Collision
      * Wall/player/adversary detection
* The player character
  + Movement
  + Collision
    - Wall
* The environment
  + Tilemap
  + Sprites

4 Manual de utilizare:

* Play mode
  + Arrow keys to move
  + Go to the goal
  + Avoid AI
* Developer Mode
  + Display (D)
  + Set cluster number (field)

4 Concluzie

* Machine learning help create better AI for competitive players
* Adaptive difficulty for different players
* Future goals
  + Extend to multiple AI agents working together