**Robot Interface description**

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Course: Game Programming Elective

# **Interface**

class Brain{

public abstract void UpdateData(RobotControls controls);

public abstract void UpdateAttack(RobotControls controls);

public abstract void UpdateMovement(RobotControls controls);

public abstract void UpdateBallPass(RobotControls controls);

protected SubjectiveRobot \_closestTeammate;

protected SubjectiveRobot \_closestEnemy;

protected bool \_noClosestTeammate;

protected bool \_noClosestEnemy;

protected List<SubjectiveRobot> visibleEnemies = new List<SubjectiveRobot>();

protected List<SubjectiveRobot> visibleTeamMates = new List<SubjectiveRobot>();

}

## **CheckForVisibility**

This function check the other robots that this robot can see. If that robot have the same team with this robot, it will be adds to the visibleTeamMate. IF it has different team number, it will be adds to VisibleEnemies.

## **UpdateClosestEnemy**

This function will compare the distance between enemy robot and this robot. And check which enemy robot in VisibleEnemies is most close to this robot. If there’s no robot in VisibleEnemies. The \_noClosestEnemy will be true.Which means there are no enemies close to you.

**UpdateClosestTeammate**

This function will compare the distance between teammate robot and this robot. And check which teammate robot in VisibletTeammate is most close to this robot. If there’s no robot in VisibletTeammate. The \_noClosestTeammate will be true. Which means there are no teammates close to you.

public struct RobotControls

{

#region Actions

public Action<Vector3> goTo;

public Action<Vector3> attack;

public Action<Vector3> passBall;

#endregion

#region Data

//new Data

public float reload;

public SubjectiveRobot myself;

public Vector3 updateBall;

public List<SubjectiveRobot> archiveRobots;

public List<SubjectivePickup> updatePickup;

// public Team team;

#endregion

}

**Action goTo**

This method takes a Vector3 and delivers it to the PlayerMovement script which uses this Vector3 to set a destination for a NavMeshAgent. That way custom brain can call this action to set a destnation point for the robot and all the pathfinding will be done automatically by the NavMeshAgent.

**Action attack**

This method takes a Vector3 and delivers it to the PlayerAttack script which uses this Vector3 to set a course for the projectile which it will instantiate and provide with a constant speed value. This script also accounts for the reload/cooldown time as it has a cooldown timer that counts down from one second to zero and stays at zero until the custom brain decides to shoot and calls the function. As soon as that happens and the projectile is instantiated and travelling towards its target, the cooldown resets back to one second and starts counting down again.

**Action PassBall**

This method takes a Vector3 and delivers it to ball script. The robot will be the ball’s Parent when the robot pick the ball. So this method will make the ball’s Parent become null again in order to drop the ball. The robot is able to throw the ball to the direction it wants. So it can pass the ball to it’s teammate.

**archiveRobots List**

This list contains infromation of type SubjectiveRobot that is updated every frame.

The list is only modified according to whether robot is seen or is in the same team as the robot that stores the list. That means that in case taget robot is no longer seen, it’s old position is still stored in the list, this data can be used to estimate robot’s position in the future.

**updatePickups List**

This list contain information about every pickups which is currently seen by the robot as soon as robot looses sight of the pickup it dissappears from its memory. This is done so that custom brain had to track information about pickups .

**reload float**

This field contain weapon cooldown of the robot. In order to track whether the robot is ready to shoot. This can be used to control robot’s behaviour.

**myself field**

This field of type SubjectiveRobot stores all the information about the robot itself. This date is refreshed every frame and can be used to track robot’s own condition which would influence robot’s behaviour

**updateBall field**

This field stores a Vector3 which is a position of the ball( inside the game it looks like a crown). Crown position is always known to all robots as it’s the main element that every roobot would try to obtain.

**GitHub Project and Names:**

GitHub project link:

<https://github.com/Woewal/ElectiveDevelopment.git>

GitHub names:

Dennis Woering - Dennis Woering

MnemosyneVL - Chiril Ojoga

Koloumis - Antreas Koloumis

Moni777 - Yiyun Qiu(Monica)

**List of Tasks:**

* Added picking up powerups and ball, and makes the player able to pass -

Dennis

* add score - Monica
* time - Monica
* health bar - Monica
* Attack and Navigation - Chiril
* Arena Stage 1 - Antreas
* Arena prefab - Antreas
* Chnages to scripts - Chiril
* Interfaces - Antreas
* Nav mesh for Arena - Chiril
* pickup - Monica
* Prefabs + Obstacles with navemeshobstacle component - Antreas
* Added speed and invisibility pickups - Dennis
* score new - Monica
* allpickups list - Antreas
* Added arena scene + added spawning + improved pickups - Antreas
* New robot list system - Chiril - Antreas - Dennis
* Arena with robots version 1 - Chiril
* obsolete code organisation - Antreas
* Made code cleaner and filled in some gaps - Chiril
* visual effects(arena) - Monica
* Effect visuals + different AI callout - Chiril
* Character Particle systems Update - Chiril
* Fixed pickup system - Dennis
* Asset pack - Chiril
* Updated UI - Dennis
* Added projectile trail and on death action - Dennis
* Health fixed - Dennis
* modified particle system - Chiril
* health import- Antreas
* Added slowdown when carrying the ball - Dennis
* Projectile fix - Dennis
* Health fix - Dennis
* Tweaked baserobot - Dennis
* Player prefab - Antreas
* Visuals update - Chiril
* ADDED CAMERA STUFF- Dennis
* Fixed errors- Monica
* Invisibility - Antreas
* Update VisualsManager.cs - Chiril
* prefabs ready - Chiril
* Added new AI- Dennis
* Fixed prefabs- Dennis
* UI for timer - Monica
* Time r- Monica
* Health - Healthbar connection - Chiril
* Pickup prefabs - Antreas
* Kirill AI V1 - Chiril
* Individual Ai segment - Antreas
* Projetiles fix - Chiril
* Moved functionality to Brain - Dennis
* AIKirill new logic for pickups - Chiril
* Changed error for closest teammate - Chiril
* Individual Ai segment - Antreas
* reverted refactor - Dennis
* Fixed FIndClosestTeammate method - Chiril
* Implemented AI - Dennis
* Fixed prefabs - Dennis
* AI & Timer - Monica
* Always get info about allies - Chiril
* Update AIKiril.cs - Chiril
* Basic behaviors for Kirill AI - Chiril
* Tag for walls - Chiril
* Fixed respawning - Dennis
* Fixed ball dropping when player dies - Dennis
* windscreen(not finished) - Monica
* Ai segment - Antreas
* Update AIKiril.cs - Chiril
* update - Monica
* improve AI - Monica
* endscreen - Monica
* Projectiles fix, Kirill AI update - Chiril
* Fix for attack - Chiril
* No more self in teammates list and multiple minor fixes - Chiril
* fix AI - Monica
* Ai Antreas 1st gen + green robot brain - Antreas
* Update AIKiril.cs - Chiril
* Score Manager fixed - Monica
* AI - Monica