

CS 387: Game AI

README

About

- **Project**
 - HW3: Mario Behavior Trees
- **Student**
 - Peter J. Mangelsdorf
 - pjm349@drexel.edu
 - 717-385-7068
- **Professor**
 - Ehsan Khosroshahi
 - eb452@drexel.edu
- **Contents**
 - [About](#)
 - [Links](#)
 - [Additions](#)
 - [Progress](#)
 - [Agent Design](#)
 - [Video Demonstration](#)

Links

- [README](#) -- Pertains to anything I *directly* did
- [Notes](#) -- Pertains to my understanding and development of the project
- [Behavior](#) -- Prototype of Project in Python

Additions

Structure

```

./
└─ src/
    └─ agents/
        └─ peterMangelsdorf/
            └─ Helpers/
                └─ Status.java           // Class           -- Values, String, Checks
                └─ Win.java              // Status          -- Represents a Win
                └─ Fail.java             // Status          -- Represents a Fail
                └─ Running.java          // Status          -- Represents still Running
            └─ BasicTasks/
                └─ Task.java             // Abstract        -- Run() returns Action([b
                └─ Composite.java        // Task            -- [Children]
                └─ Do.java               // Composite       -- Run() visits each child
                └─ Choose.java           // Composite       -- Run() visits each child
                └─ Action.java           // Task            -- Do a thing to the exter
                └─ Condition.java        // Task            -- Get a thing from the ex
            └─ MarioTasks/
                └─ Wait.java             // Action          -- Returns [bool] of no ac
                └─ Jump.java             // Action          -- Returns Jump
                └─ RunRight.java         // Action          -- Returns Right and Run
                └─ RightRunJump.java     // Action          -- Returns Right and Run a
                └─ AttackJump.java       // Action          -- Returns Jump/Right comm
                └─ Stopped.java          // Condition       -- Measure speed of Mario
                └─ EnemiesClose.java     // Condition       -- Do we need to worry?
                └─ EnemyInRange.java     // Condition       -- Can we step/jump on an
            └─ Agent.java                // Agent           -- Provide easy access to

```

Progress

Chapter 1: Starting Anew

- We are now in the new source repo!
- Thanks to <https://help.github.com/en/github/creating-cloning-and-archiving-repositories/duplicating-a-repository>
- Much easier to load agents...
- If you are wondering what happened, see my old repo at this link:

<https://github.com/peter201943/Mario-Behavior-Trees>

Long Story Short: I couldn't get any of the code to work. There were bugs, then there was confusion, and at that point I had spent over 2 days trying to get it to work. I decided then to look for another implementation of this project in Java. I hope that if this project is to be done again in the future, that you use this version, as it is far more robust, up to data, and well organized.

Chapter 2: Hiring an Agent

- `random.Agent.java` looks to be the easiest to understand
- An action is returned once every frame by the looks of it.

Chapter 3: Making Tasks

- <https://stackoverflow.com/questions/42849890/can-i-mutate-argument-in-java>
- Why...
- omg omg omg it works it works it work!
- Andd..... he falls into the pit. *sigh*... more work.

Agent Design

- Didn't have time to write an XML/YAML parser
- This is the logic:
- If enemies capable of attacking, wait and step on them
- otherwise, run right and jump (get lucky)

Plain

```
# Forward Jump
do:
  choose:
    do:
      enemiesClose?
      choose:
        do:
          enemyInRange?
          attackJump!
          wait!
    do:
      stopped?
      rightRunJump!
```

```

do:
    pit?
    rightRunJump!
do:
    runRight!

```

Type Annotations

```

# Forward Jump                                -- comment
do:                                           -- sequence
    choose:                                  -- selector
        do:                                 -- sequence
            enemiesClose?                   -- condition
            choose:                         -- selector
                do:                         -- sequence
                    enemyInRange?           -- condition
                    attackJump!             -- action
                wait!                       -- action
        do:                                 -- selector
            stopped?                         -- condition
            rightRunJump!                   -- action
    do:                                       -- sequence
        pit?                               -- condition
        rightRunJump!                       -- action
    do:                                       -- selector
        runRight!                           -- action

```

Justifications

```

# Forward Jump
do:
    choose:
        # deal with enemies
        do:
            enemiesClose?
            choose:
                do:
                    enemyInRange?
                    attackJump!
                wait!
        # deal with walls
    do:
        stopped?
        rightRunJump!

```

```
# deal with pits
do:
    pit?
    rightRunJump!
#deal with clock
do:
    runRight!
```

Video Demonstration

A video of my agent can be accessed on YouTube at this link:

<https://www.youtube.com/watch?v=M4K63BCFPz4>

This Project can be accessed on [Github](#) *please request permission, the repo is private.*

<https://github.com/peter201943/Mario-AI-Framework>