Press any key to start..

CSCI 599:
Applied Machine Learning for Games

Team - BotAlmighty

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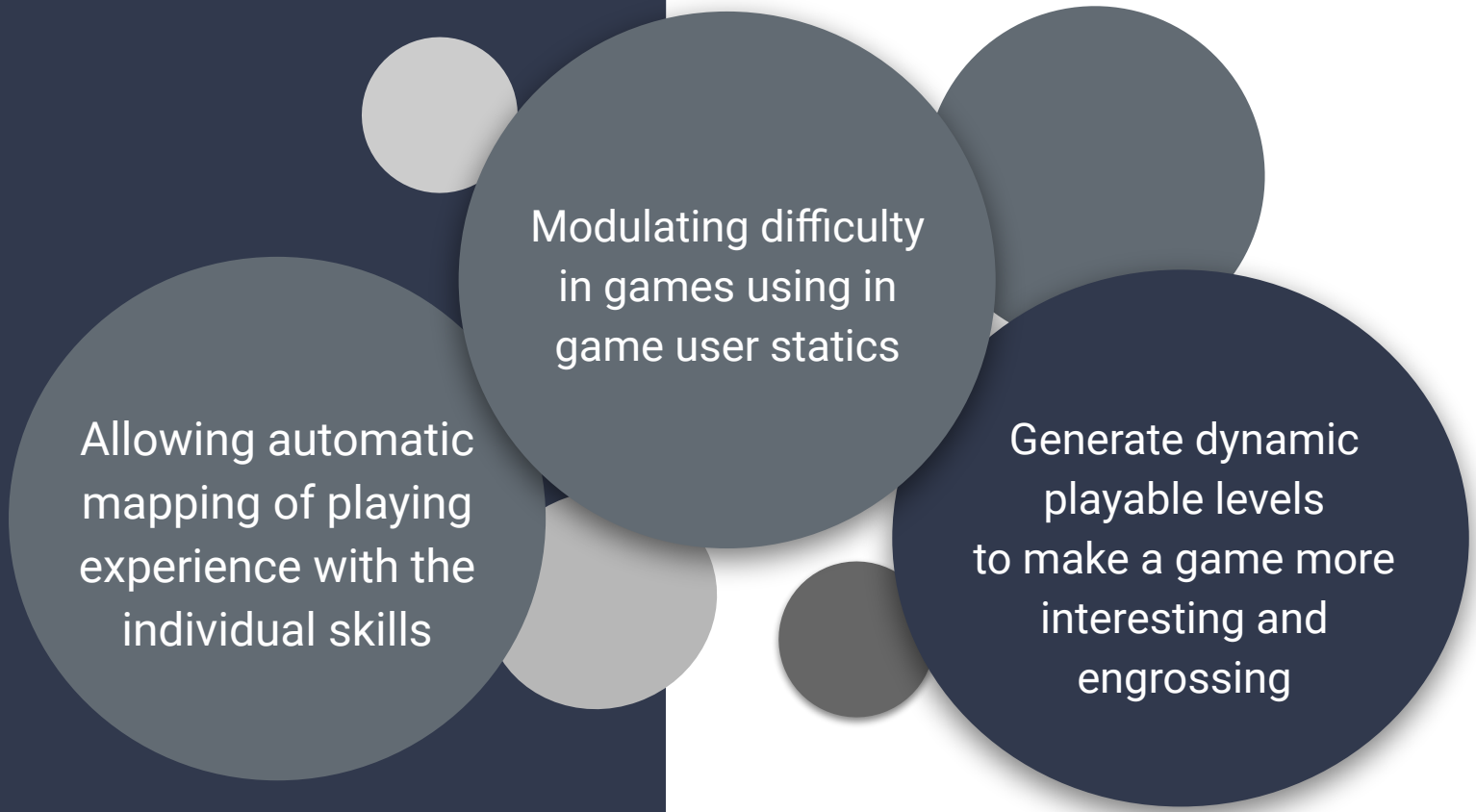
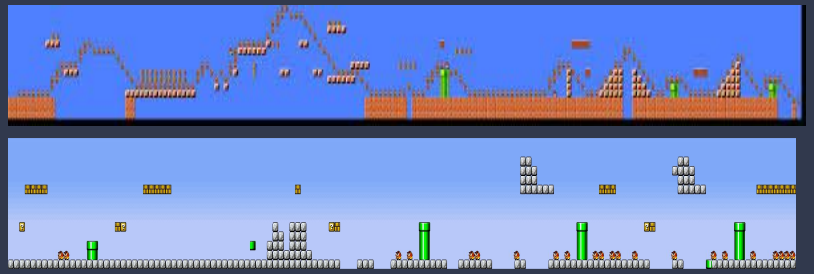
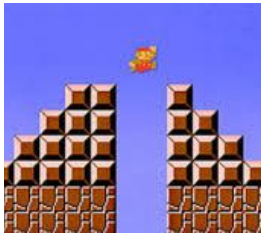
About the Project

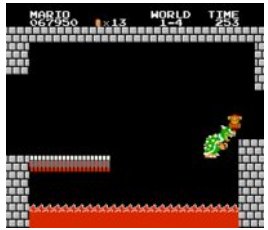


Workflow



Generating Levels



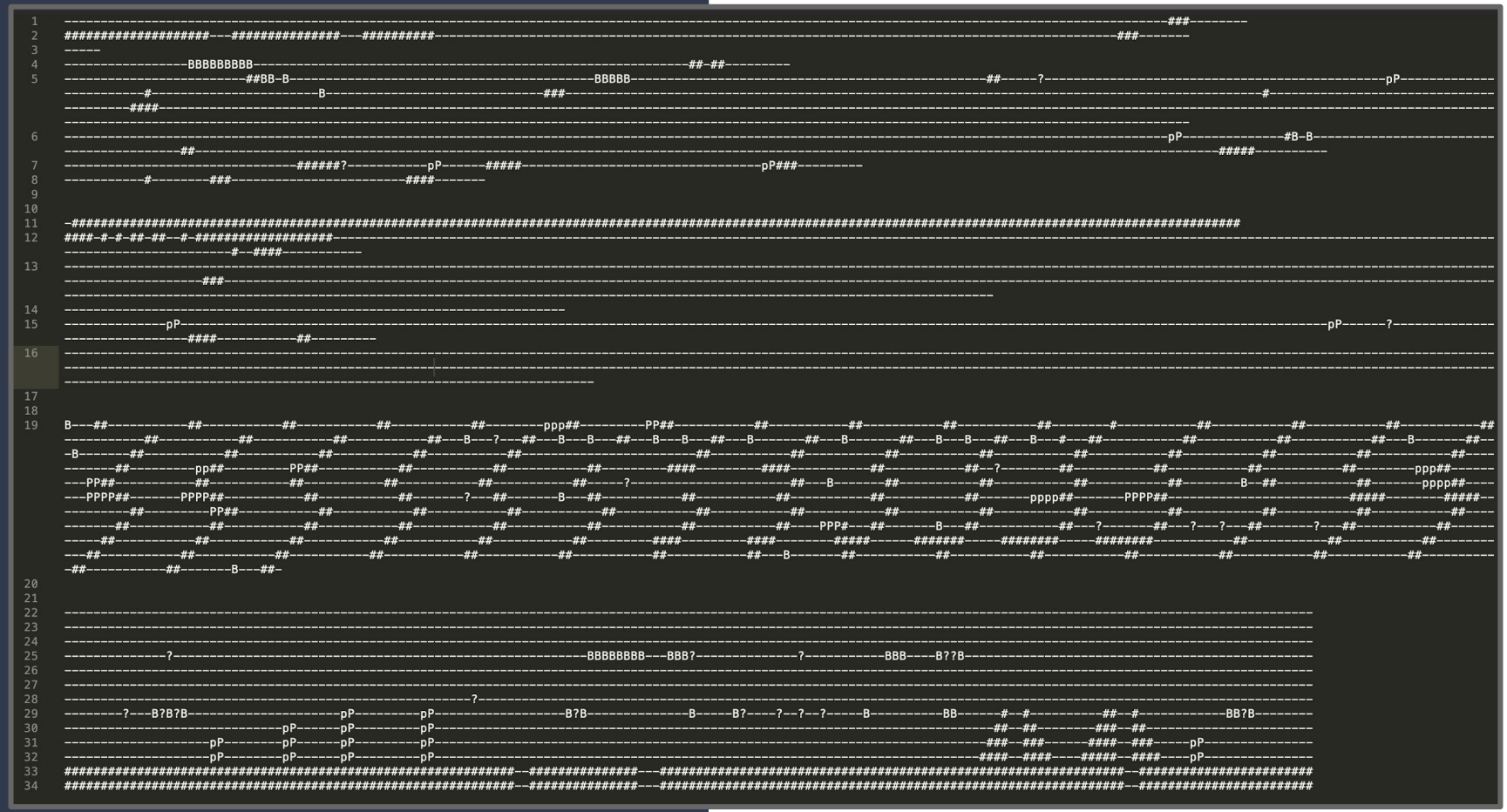


Creating a bot

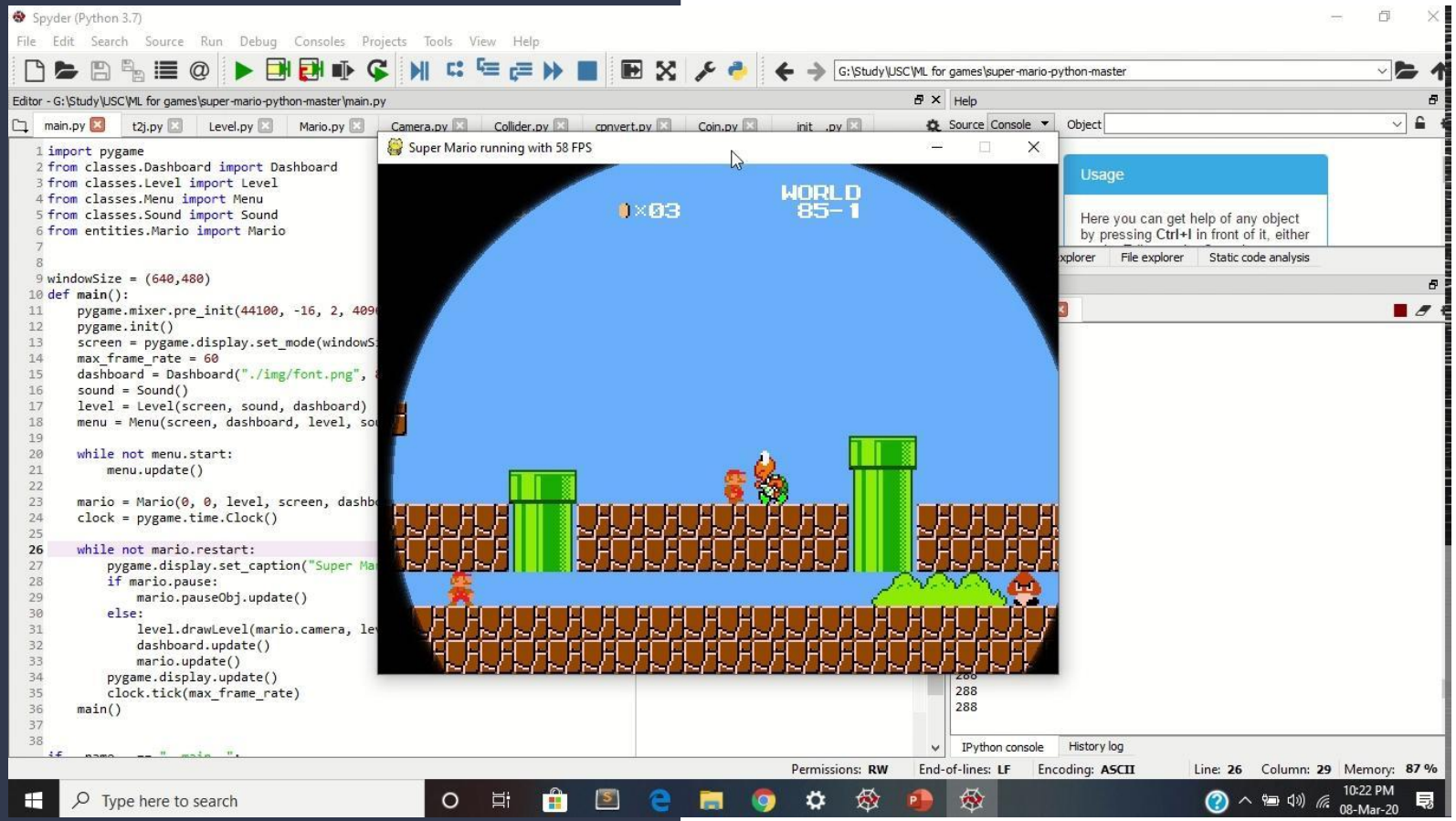
Mario bot tested level

Level Generation Implementation

Level Generation Implementation



Mario Level


Spyder (Python 3.7)
File Edit Search Source Run Debug Consoles Projects Tools View Help
G:\Study\USC\ML for games\super-mario-python-master
Editor - G:\Study\USC\ML for games\super-mario-python-master\main.py
main.py t2j.py Level.py Mario.py Camera.py Collider.py convert.py Coin.py init .py
1 import pygame
2 from classes.Dashboard import Dashboard
3 from classes.Level import Level
4 from classes.Menu import Menu
5 from classes.Sound import Sound
6 from entities.Mario import Mario
9 windowSize = (640,480)
10 def main():
11 pygame.mixer.pre_init(44100, -16, 2, 409
12 pygame.init()
13 screen = pygame.display.set_mode(windowS
14 max_frame_rate = 60
15 dashboard = Dashboard("./img/font.png",
16 sound = Sound()
17 level = Level(screen, sound, dashboard)
18 menu = Menu(screen, dashboard, level, so
20 while not menu.start:
21 menu.update()
23 mario = Mario(0, 0, level, screen, dashb
24 clock = pygame.time.Clock()
26 while not mario.restart:
27 pygame.display.set_caption("Super Ma
28 if mario.pause:
29 mario.pauseObj.update()
30 else:
31 level.drawLevel(mario.camera, le
32 dashboard.update()
33 mario.update()
34 pygame.display.update()
35 clock.tick(max_frame_rate)
36 main()
Super Mario running with 58 FPS
×03
WORLD
85-1
Help
Source Console
Object
Usage
Here you can get help of any object by pressing Ctrl+I in front of it, either
xplorer
File explorer
Static code analysis
288
288
IPython console
History log
Permissions: RW
End-of-lines: LF
Encoding: ASCII
Line: 26
Column: 29
Memory: 87 %
Type here to search
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08-Mar-20

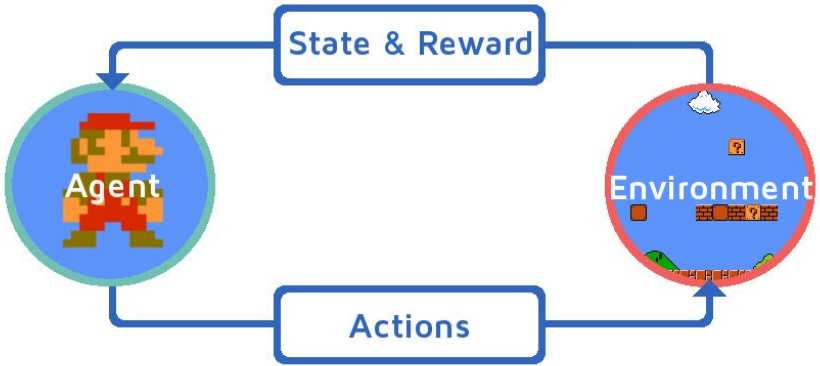
Mario Bot

1. Reinforcement Learning
2. OpenAI Gym environment for Super Mario Bros. on The Nintendo Entertainment System (NES) using the nes-py emulator
3. Agent : Mario
4. Environment : Standard Mario level

Environment	Game	ROM	Screenshot
SuperMarioBros-v0	SMB	standard	
SuperMarioBros-v1	SMB	downsample	
SuperMarioBros-v2	SMB	pixel	

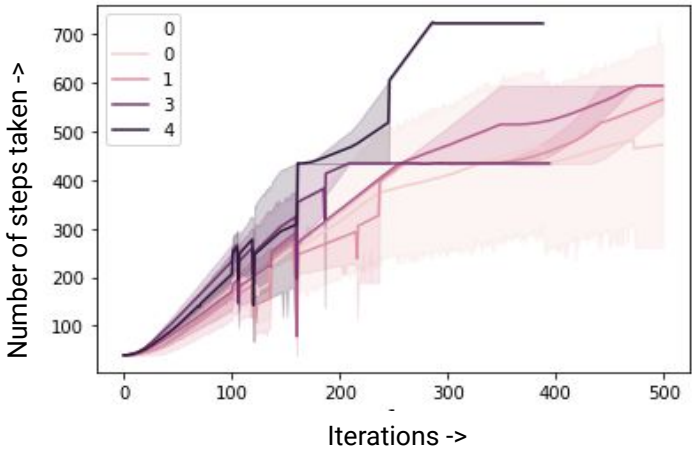
5. Reward : Objective of the game is to move as far right as possible (increase the agent's x value), as fast as possible, without dying

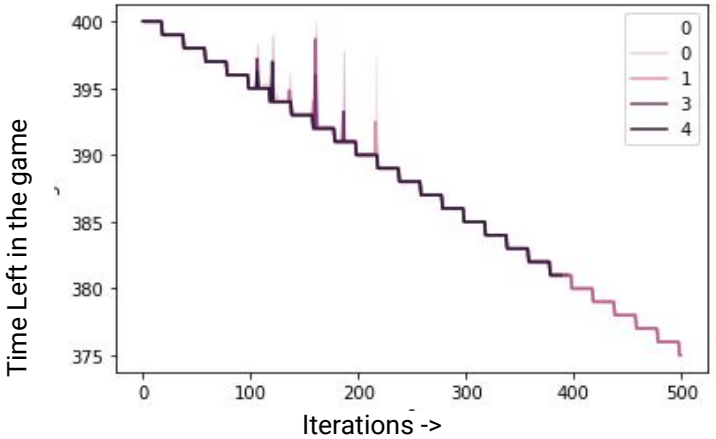
V : the distance travelled by the bot
C : the time taken by the bot
D : number of deaths



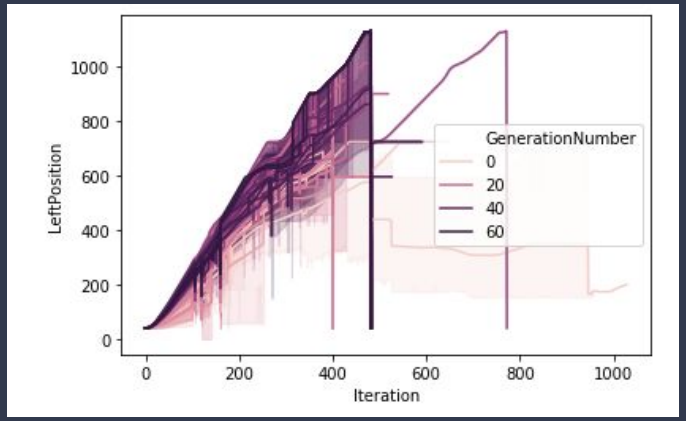
Generation - 5

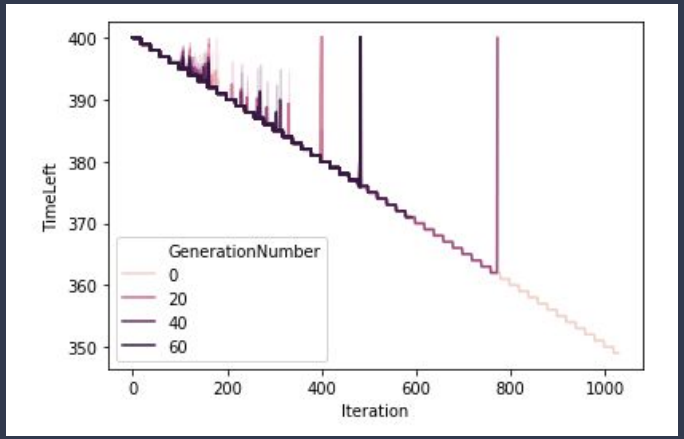
Iteration - 500





Generation - 50





Iteration - 1000

Generation - 5000

Iteration - 10000

Aim for the future weeks

Week 10

Make the bot play on the generated levels and gather statistics for the bot

- number of jumps
- number of sprites killed
- number of times Mario transformed

Week 11

Integrate statistics into the learning phase for level generation

Week 12 - 13

Work on dynamic level generation and tune difficulty progression

Week 14 - 16

Finalisation of project and working on further improvements

Thank You