MILESTONE 1 - PRESENTATION

Minecraft Education Group C

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CREATING AI AND ML LESSONS FOR MIDDLE SCHOOLERS WITH MINECRAFT EDUCATION

Our project aims to introduce middle schoolers to the world of computer science, specifically to Artificial Intelligence and Machine Learning. Students will use AI/ML topics, along with Python, to interact with and manipulate the Minecraft world around them.

WHERE WE ARE WITH OUR CLIENT

Our client is Microsoft and Mojang Studios. We are currently working with the client to create a ‘learning arc’ between the three Minecraft Groups (Elementary, Middle, and High School). Additionally, we are continuing to brainstorm ideas about how AI and ML can be introduced to middle schoolers.

WHAT IS MINECRAFT EDUCATION EDITION?

MINECRAFT EDUCATION IS A VIDEO GAME BUILT UPON THE POPULAR VIDEO GAME MINECRAFT. STUDENTS CAN PLAY LESSONS CREATED IN MINECRAFT EDUCATION TO LEARN ABOUT A VARIETY OF TOPICS IN ARTS AND SCIENCE, SUCH AS MATHEMATICS AND HISTORY. STUDENTS CAN CRAFT, BUILD, MINE, AND NOW EVEN CODE IN MINECRAFT EDUCATION TO INTERACT WITH THE WORLD AROUND THEM.

Features

COMPUTER VISION

Robot Guard

NATURAL LANGUAGE PROCESSING

Translation model

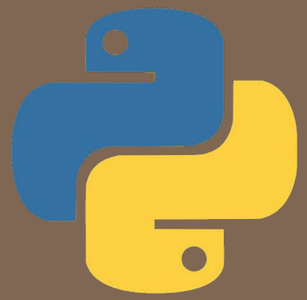
CONCEPT OF MACHINE LEARNING ALGORITHM

Linear regression and K-Means Clustering

BASIC PYTHON PROGRAMMING

Control agent, define function etc.

TECH STACK

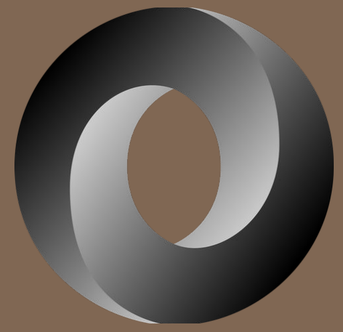


PYTHON

The students will use Python in their lessons to learn AI/ML concepts.

C++

Lessons created with Everglade: an add-on to Minecraft Education's Codebuilder used to teach Python.



JSON

Lessons can be created with a JSON file and a Jupyter Notebook file.

LESSON SECTIONS

THE STEPS IN THE LESSON, INCLUDING INSTRUCTIONS AND EXAMPLES

THE CODE EDITOR, WHERE STUDENTS WILL EDIT AND RUN THEIR CODE

USER GROUPS

TEACHERS (PRIMARY):

Providing a useful tool for instructors who attempt to introduce their students AI and ML.

STUDENTS (PRIMARY):

6-18 years old, having interest in AI:

- Elementary school students
- Middle school students: Able to accept basic concepts of AI; Improve understanding on Computer Science;
- High school students

TIMELINE

Requirements and Design Milestone

Presentation and written report

Peer Testing 1: Technical Report

UML diagrams
Error handling plan
Interface and API
Data Model

Peer Testing 2: Low Fidelity prototype

Mock-ups associated to usability scenarios

Final Project: High Fidelity prototype

Coded prototype

Non-Functional Requirements

1

USABILITY

- Student friendly UI design
- Lessons feedback
- Save & Load

2

RELIABILITY

- Error detection

3

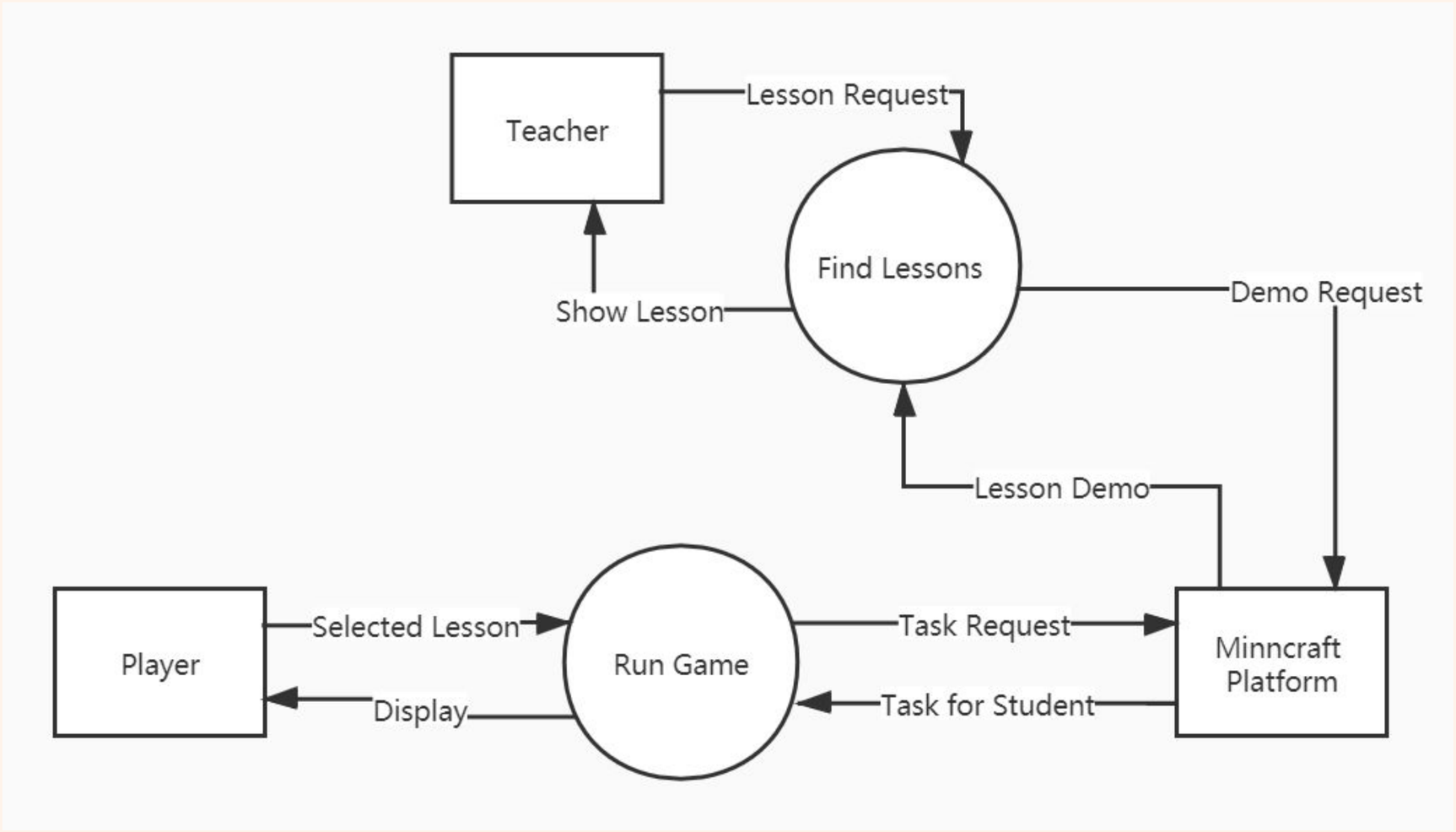
REGULATORY

- No players are allowed to attack NPCs

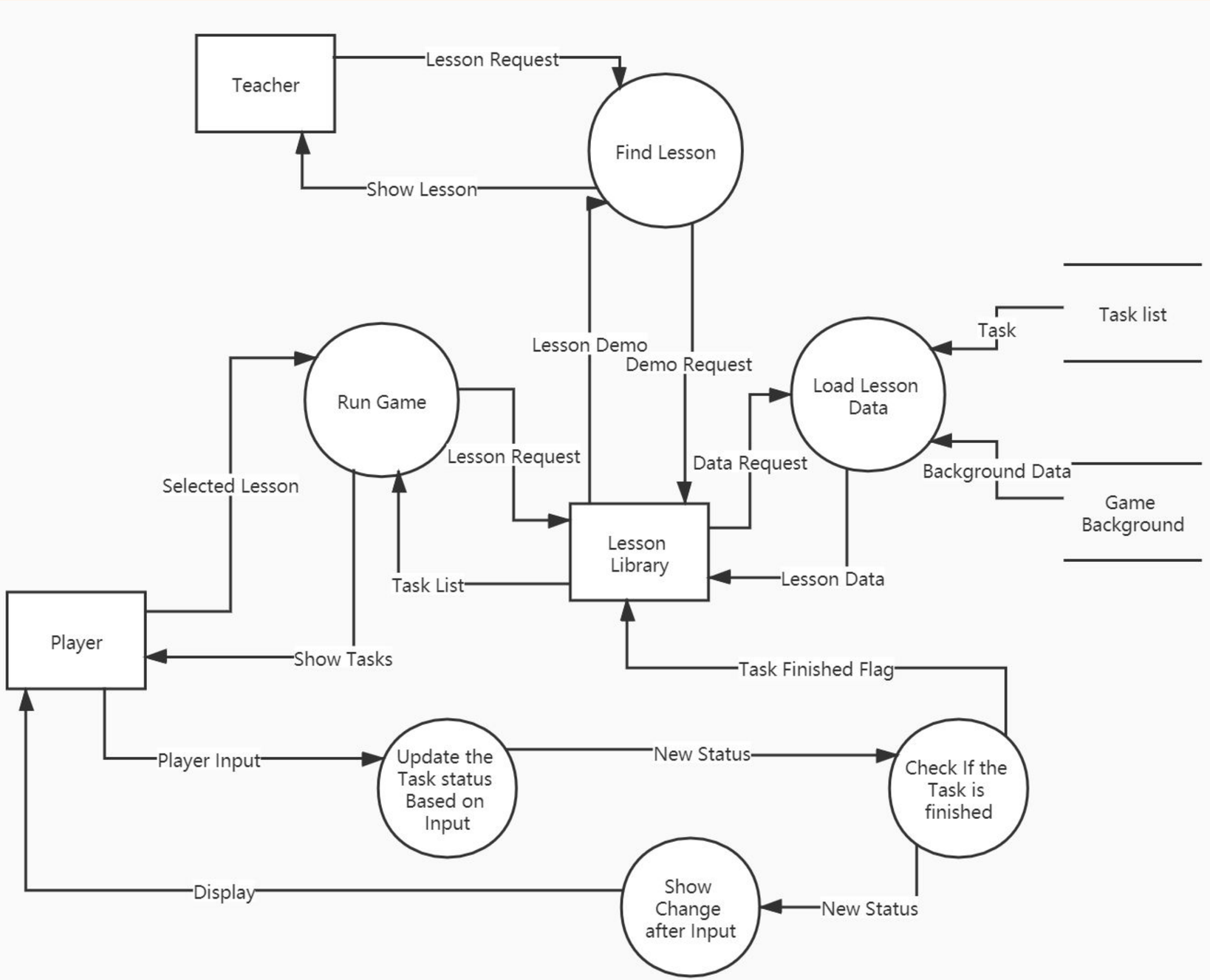
4

SECURITY

- Safe for classroom use


Teacher
Lesson Request
Find Lessons
Show Lesson
Demo Request
Lesson Demo
Player
Selected Lesson
Display
Run Game
Task Request
Task for Student
Minncraft Platform

DFD - LEVEL 0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Task
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Demo Request
Load Lesson Data
Run Game
Lesson Request
Data Request
Background Data
Game Background
Selected Lesson
Lesson Library
Task List
Lesson Data
Player
Show Tasks
Task Finished Flag
Player Input
Update the Task status Based on Input
New Status
Check If the Task is finished
Display
Show Change after Input
New Status

DFD - LEVEL 1

TESTING STRATEGY

UNIT TESTING

Test-driven development

Part of PR acceptance criterias

FUNCTIONAL TESTING

After each merge

PERFORMANCE TESTING

2-weeks before each milestone

THANK YOU!