Machine Learning Tetris Assistant

Sage Gray, Jackson Burns, Cam Witt, Natalie Harris
University of Tennessee, Knoxville, sgray38, jburns46, cwitt8, mzg857@vols.utk.edu

***Abstract* - Tetris is an extremely popular game that is known for its difficulty and addictive qualities. An emulator can be used to create replicable game states for the purposes of finding an ideal line of play to get out of any situation in which a player may find themselves. With data from HuggingFace and the saved data from players, it is possible to train a model to assist when the board reaches a breaking point.**

Index Terms - HuggingFace, Machine Learning, Tetris, AI.

Objective

The goal is to create a program that "watches" the player play Tetris. If the player gets stuck and the blocks reach a certain height limit then the program kicks in and takes over to help the player get out of this sticky situation. We also want the program to be able to continually learn from the player.

Motivation

Tetris is one of the most well known games in the world. An assistant to help players get higher scores sounded both fun to make and fun to use. Each of the members of this group have aspirations to work with machine learning and artificial intelligence and this project is a strong way to improve and test those skills.

Discussion of Data

This project will pull data Tetris play data from Kaggle and HuggingFace and use that to train the sidekick on what the most efficient and optimal moves are. If there is insufficient data in the datasets, more data will be gathered from players recording on an emulator.

Responsibilities

Sage Gray: Finding datasets and gathering extra data from the emulated gameplay.
Jackson Burns: Work on the ML model performance and accuracy as well as helping with the game-model interactivity integration
Natalie Harris: Designing data collection system and integrating it with some time-series analysis model. Creating automated visualizations of key metrics.
Cam Witt: Get the base Tetris game up and running, work on the ML model

Milestones

- Have the actual tetris game playable (lacking the AI part) (10/10)
- Create ML model (10/17)
- Have ML model learn from the user (10/24)
- Have ML model make suggestions to the user (10/31)
- Let the ML model play the game for the user (11/7)

Expected Outcome

A working application that works alongside Tetris gameplay that can accurately and efficiently play Tetris and get the player out of sticky situations whenever it kicks in. Additionally, our reinforced knowledge and experience with data sets and machine learning programming.