Program structure

Console Interface

Tasks

- handles all user interaction
    - input of commands
    - interpretation and validation of those commands
        - print error messages and command feedback to the user
- acts according to these commands:
    - loads geogebra files by making use of the scripts implemented in *ggb_import*
    - initializes a class for an imported puzzle (see *puzzle_class*)
    - stops display of animation of a puzzle by terminating the class via `close_animation`

Puzzle Class

Tasks

- stores all information about a puzzle:
    - current 3d objects (using vpython)
    - current state of those objects
- can print out all currently defined moves via `listmoves`
- changes the stored information and controls the animation accordingly
- save all stored information about the puzzle in files
- load puzzle information from a file

    - !!! This may cause a conflict:

      when geogebra files are loaded, a puzzle class will be created from the outside.

- initialize AI class to train an AI to solve the puzzle
    - start Q-Learning via `train_Q_learning`
    - start Neural Network training via `train_NN`

AI Class

Are these seperate classes for Neural Networks and Q-Learning? If so, how exactly do they relate?

Tasks

- stores information about the Q-table
- stores solved state and moves of the puzzle
- trains the Q-table via self-play
- calculates an AI-action based on a given state and algorithm (either Q-Learning or NN; only if previously trained)
- saves information (Q-table, NN weights and structure) for the AI in files
- loads AI information (Q-table, NN weights and structure) from a file