Geometry Player 3D - Quickstart

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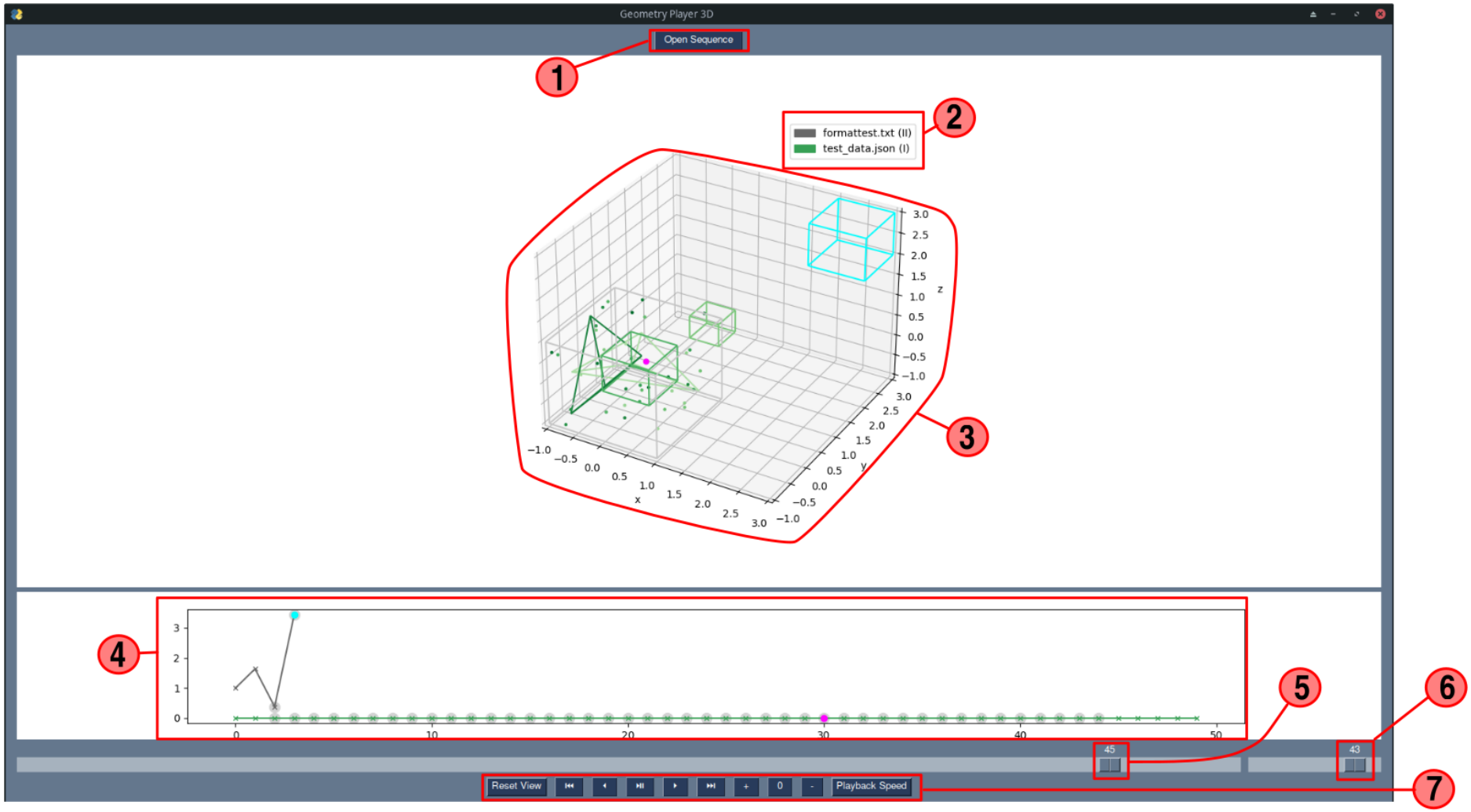
Please note: This project is still under development. The basic functionality is given. Some further improvements are planned.

1 Installation and Execution

1. install python.
2. install the required python packages (requirements.txt).
3. run `python -m source.main` in a terminal that is open in the directory containing the source folder.

2 Usage


Geometry Player 3D
Open Sequence
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formattest.txt (II)
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1. Open Sequence: Opens a browser in which you can select a file with sequence data. Some sequence examples are provided. You can also create random test sequences using testdatagenerator.py. The files should be valid json files. However, the file extension does not have to be ".json".

   The geometry player can receive sequences that contain 3D points in the form `[[x,y,z]]` or arrays of line segments each in the form

```
[
        [ [x1,y1,z1],[x2,y2,z2] ],
        [ [x3,y3,z3],[x4,y4,z4] ],
        ...
]
```

2. Legend: Shows which sequences are loaded. (I) indicates the currently selected sequence. You can select a sequence by selecting the first selectable data object. (II) indicates which sequence contains the second selectable data point. Please refer to item 4 for the selection procedure. (I)(II) is set to the first loaded sequence by default.

3. 3D Plot: This plot shows your sequence objects accordingly to the current frame, the window length and due to zooming actions.

4. Distance Plot: Shows the euklidean distance of the data objects to the reference point. The reference point is always the data object of the selected sequence. I.e.: At frame 30 we would compute the distances between the 30^{th} object the not selected sequences to to the 30^{th} object of the selected sequence. If the selected sequences is shorter than another sequence we wouldn't have a reference point. Therefore, the distance value for these data objects would be -1.

   The data objects highlighted in gray are the ones which are actually shown in the 3D Plot.

   Additionally, the user can select a data object by left-clicking on a data object in the distance plot. This will also set the selected sequence. This first selected data object will be shown in the color fuchsia (pink).

   By using the right-click of your mouse you would mark a second data object. This object will be shown in the color aqua (lightblue).

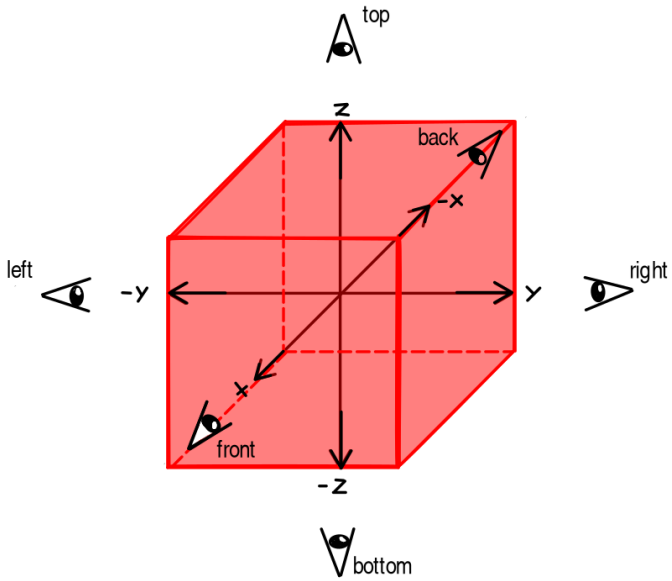
   You cannot select more than these two objects at the same time.

5. Frame slider: You can select a frame with this slider. Every frame contains the corresponding data object per sequence.

6. Slider for the window length: This slider can be used to set the length of the window. The window length determines how many frames are displayed. With a setting of one, only the objects of the current frame are displayed. With a setting of ten, all objects in the nine frames before the current frame and the current frame are displayed.

7. Navigation Bar:

   i) Reset View: Resets the view of the 3D Plot. The options available are: *standard view, left view, right view, front view, back view, top view and bottom view.* It is also possible to rotate the 3D Plot with your computer mouse.



   ii) ⏮ : Jump to start frame.

   iii) ◀ : Go one frame backward.

   iv) ⏯ : Play/Pause Button. If not paused, the next frame is always displayed according to the playback speed.

   v) ▶ : Go one frame forward.

   vi) ⏭ : Jump to last frame.

   vii) **+/0/-** : Zoom in / Reset zoom / Zoom out. With the 'Zoom in' function, we zoom in closer to the first selected data object object in the 3D view. We do this by excluding one data object at a time from the 3D Plot in order to get closer to the desired object. You can also use the mouse wheel to zoom in or out.

   viii) Playback Speed: Offers different playback speed factors from 0.25 to 2.0.