

Simple python GUI

Project Description

The goal is to implement a python GUI with an embedded open GL (OGL) 3D space window (say size 500x500) and some control (see layout). The OGL window will show a single main particle P1 (sphere, size say 1.0) that will be placed in the cube (say from -10 to 10 in each direction, indicated by thin lines), and the user must be able to adjust the particle position in 3D space with 6 keys (increment=0.1) as follows:

[←] $x=x+\text{increment}$

[→] $x=x-\text{increment}$

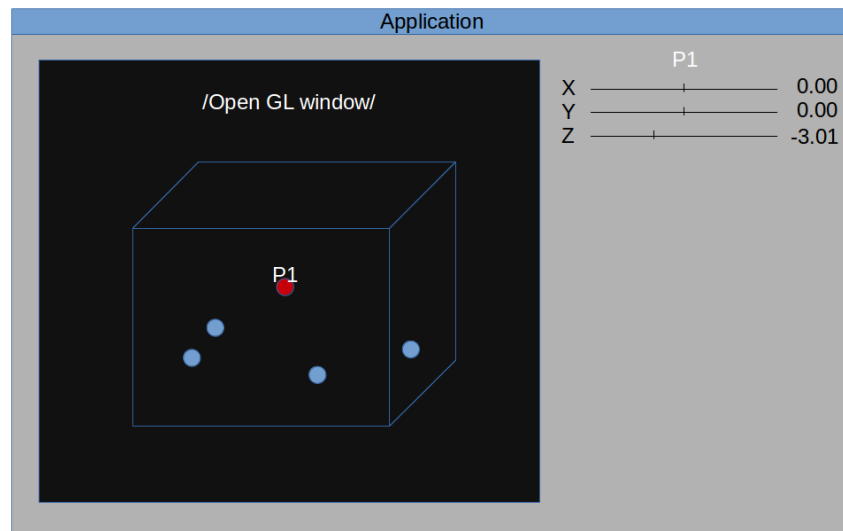
[↑] $z=z+\text{increment}$

[↓] $z=z-\text{increment}$

[N] $y=y+\text{increment}$

[M] $y=y-\text{increment}$

Each coordinate value is limited to within the cube region. Control sliders will enable position adjustment as well and actual coordinates should be displayed nearby (dynamically showing the coordinates and adjusting slider values also in case of keyboard control). Another say 10 particles will be moving randomly around in the box and steps outside of the cube will be rejected.



The app should be as fast as possible, so that hundreds of particles moving around in real time (say at least 5-10 steps/sec) on modern notebook do not cause visible delays. Proposed libs: PyQt and pyopengl.

The supported file is .py script working directly from Linux shell under, e.g., XUBUNTU.

Follow up work (next project extending this one)

The follow up project with 5-10x bigger budget will include, e.g., adding more OGL windows (views), dynamic boundaries (not box but multidimensional functions depending on all particle positions), particle interactions, dynamic plots & data analysis, volume color-coding, particle dynamics mouse control (particle will have oriented front view and mouse will control direction whereas movement will be controlled by arrows like in a car game), etc.