CrescentObservationTrainer

by martinel@mondatlas.de

Purpose

The program can be used to train for difficult crescent observations.

The program displays a faint lunar crescent on the screen, which the user can try to find. The background sky is modulated by a brightness gradient and noise. The display is refreshed once per second. The crescent can be moved randomly across the screen. The brightness of the crescent can be varied.

The elongation and orientation of the crescent can be set through the command-line. Sky-brightness and sky-colour, sky-brightness-gradient and sky-brightness-noise can be set through the command-line. The size of the window and the field-of-view can be set through the command-line.

Starting

Start the program by through the command-line:

```
java -jar crescentTrain.jar
```

Keys

The following keys are recognized:

- Pressing the **Space** key moves the crescent to a new, random location.

- Pressing **r** reveals the current crescent.
- Pressing **b** makes the crescent somewhat brighter.
- Pressing **f** makes the crescent somewhat fainter.

- Pressing **h** shows / hides this text.
- Pressing **q** ends the program.

Choose elongation and orientation to suit a particular young or old moon.
Experiment with the field-size and sky- and crescent-colors, to see the effect on crescent visibility.

Please note: Sometimes the crescent is located partially / fully **OUTSIDE** of the visible field. This is a useful artefact of the random positioning, as in the real world you will not always have centred the crescent exactly with your scope.

Command-line parameters

The program attempts to read numerous parameters from the command line. These can be used to influence all display-settings. All possible parameters with their default / read values are listed at program start.

Parameters:

size:
Window-size in pixels. Adapt to you screen-heigth. Integer values only.

rSky, gSky, bSky:
Red, green and blue components of the maximum sky brightness, [0; 255.4]
gradient:
Darkening of the sky from top to bottom, [0; 255.4]
noise:
Noise applied to the sky-brightness, small float values are suitable
rMoon, gMoon, bMoon:
Red, green and blue components of the crescent brightness, [0; 255.4]
elong:
Elongation of the crescent in degrees, [0; 180]
orientation:
Orientation of the crescent above the horizon in degrees, [-90; +90]
field:
Field of view in degrees, moon is rendered to be 0.5 degrees across.

Example

Starting the program with increased window-size, modified elongation, orientation and field of view, with a blue Moon and a lot of noise:

```
java -jar crescentTrain.jar size=1000 orientation=45 elong=20
field=5 bMoon=40 noise=30

size=1000
orientation=45
elong=20
field=5
bMoon=40
noise=30

delay=1000
size=1000
rSky=240
gSky=150
bSky=100
gradient=100
noise=30
rMoon=2
gMoon=2
bMoon=40
elong=20
orientation=45
field=5
randomPos=true
```

The given parameters are listed first.
Then the program lists all possible parameters and the read values / default values used.

Comments & suggestions are welcome.