1. What is it?

It's a small tool I made in a weekend to satisfy my desire to make a landscape creator. It uses a depth map and a segmentation map, together with a small "texture pack". You can save and load the result, also edit them as well.

2. How to use?

To make the best use out of it, you first have to understand the controls.

- Mouse BTN 0 (left drag)
  - In depth mode (mode 1) – fills the square under the mouse cursor with the selected depth in the depth map, changes the substance to the selected substance in the texture map
  - In texture mode (mode 3) – fills the square under the mouse cursor with the selected substance. DOESN'T CHANGE THE DEPTH MAP
- Mouse BTN 1 (right drag)
  - In depth mode (mode 1) – does the same thing as pressing Mouse BTN 0 in texture mode (mode 3)

- 1 – Change to depth mode (mode 1)
- 2 – Change to shadow mode (mode 2)
  - Debug only, shadows can be toggled on and of using T
- 3 – Change to texture mode (mode 3)

- T – toggle shadows

- [- increase the resolution of the image (slower)
-] – decrease the resolution of the image (faster)

- ; - change the brush size (make it smaller)
- ' – change the brush size (make it bigger)

- S – save image at current resolution
- L – load image (at current resolution)

- . – Change substance (index +1)
- , - Change substance (index + 2)

3. The file system (the data folder)

- *data/config*
  - labels.txt – Contains the all the possible substances and their corresponding textures in the following format:
    - data/substance.jpg – the path to the current substance's texture

        - 0 255 0 – the RGB values of the color, that corresponds to the current substance in texture mode (mode 3)
        - SUBSTANCE – the name of the substance, visible in all modes
        - 0 / 1 – use (1) or don't use fog (0)
    - In_labels.txt – Contains the color information, needed to convert the image data, contained in data/in, into information, that can be used by the program
        - 0 255 0 – the RGB information, that maps the color of the segmentation map to the color of the substance at the same row in data/labels.txt
    - Fog.txt – Contains the color information, about the fog – R, G, B
- *data/out*
    - segm.jpg – the segmentation map of the program's output
    - image.jpg – the image output
    - depth.jpg – the depth information about the output image
- *data/in* – the same as data/out, but for the input image

4. How it all works

The program works by multiplying the uv coordinates of the texture at a point by the depth at the same point, creating a feeling of depth. It selects which texture to use, based on the color in the texture channel (mode 3) and uses it.

The shadows use a shadow kernel that checks the difference between neighboring pixels and if bigger than a threshold – sets to 1. After that, there is another pass by a blur kernel, that blurs the pixels of the shadow map by a few iterations.

Finally there's fog, overlaid on top based on the depth information about the pixel.