Py3D Scene Editor Documentation Release

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Feb 09, 2018

Getting started

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The application was developed to design 3D scenes for the the Python 3D Engine.

This application toguether with the Python 3D Engine can be used to help computer vision algorithms extract 3D information from 2D video.

CHAPTER 1

Functionalities

- Add and manipulate cameras properties in a 3D scene.
- Add 3D solids to a scene.
- Trace pixels rays from cameras and detect collisions with objects in the scene.
- View a 3D scene from a virtual camera prespective.
- Export the scene to a OBJ format file and open it in a external software.

Scene calibrator - [Import cameras from video]	
	Scene Ø 🗷 Cameras
	Objects
	Type Triangle *
	Add object
	Floor
	* Pool
	Threshold-Region0 Threshold-Region1
	Threshold-Region3
	Threshold-Region2 Threshold-Region4
	Object details @ 8
i i i i i i i i i i i i i i i i i i i	Parent objectNone *
	Name Floor
	Color [0.0, 0.0, 1.0, 0.0]
	Point 0 [24.0, -22.0, 0.0]
	Point 1 [-18.0, -22.0, 0.0]
	Point 2 [-18.0, 2.0, 0.0]
	Point 3 [25.0, 2.0, 0.0]
	Defection
	Refraction

CHAPTER 2

Developer

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2.1 Install & run

- Download & install Anaconda or Miniconda.
- Download and uncompress the py3dsceneeditor repository.
- Open the terminal and go to the previous uncompressed directory.
- Execute in the terminal the next command to install the Anaconda/Miniconda environment.

conda env create -f environment-ubuntu17.yml

• Activate the environment by executing the command:

source activate py3dengine-environment

• Execute in the terminal the next command to update the code:

```
python install.py
```

• Execute in the terminal the next command open the application:

python -m py3DSceneEditor

2.2 My first 3D scene

Download the example: material file, object file

Add the first camera and set the camera matrix.

Scene calibrator			
	Scene		
	Cameras		
	Add camera		
	Cameras		
💷 Import cameras from video	New camera		
	Objects Object details		
	Name New camera		
	Video Open		
	Camera matrix and distortion		
	Width 1279.0 Height 719.0		
	Focal x 654.55 Focal y 654.55		
	Camera matrix		
	[[654.55, 0. ,639.5], [0. ,654.55,359.5], [0. , 0. , 1.]]		
	Distortion , 0.120226070285, 0.0, 0.0, -0.0201695654541]		
	Calibrate		
	Calibrate manually		
	Camera transformations		
	Renderization		
	Rays		

Add the first triangle and set the color, point 1, point 2 and point 3.

		Scene calibrator - [Import cameras from video]	
01 File			-0×
Object details	ØX	Scen	
Parent objectNone	-	Cam	eras
		Obje	ects
Name Triangle 1			
		Туре	Triangle *
Color 1,0,0,0.5			Add object
Point 0 10,10,10			riangle 1
Point 1 10,-10,10			
Point 2 -10,10,10			
	-		
		$\mathbf{\lambda}$	

Save the scene using the main menu option: Save scene as.

2.3 Getting started