Tour Into the Picture

Computer Vision Challenge SoSe22 - Group 04

TUM

Introduction

To make animation from one 2D picture, this method TIP(Tour Into the Picture) is used to struct the 3D model via GUI (Graphical User Interface). The background consists of at most 5 rectangles, whereas polygons are used as a model for each foreground object. Then a virtual camera is moved around the 3D scene model, with the viewing angle being freely controlled.

Team

- Siyao Wang
- Chi Zhang
- Wenxin Tang
- Xuedong Zhang
- Zhengxuan Yuan

Challenges

- the foreground object models are restrictive to complicated objects
- the texture of the foreground object is not perfectly inherited

References

Modeling Foreground Objects

VP — rear wall

rear wall — C VP Object

- **Judge Attached Background**
- **Calculate 3D Vertexes**
- **Perspective Transform**
- **Construct 3D Foreground**

Image Segmentation

Foreground | **Background**

Image Processing

GUI

- Image Selection
- Camera Setup
- Animation

Modeling the Background

```
9          10
11  7    8  12
    1  2
5          6
3          4
```

- **Spidery Mesh**
- **Calculate 12 2D-Vertexes of Background**
- **Fill the Missing Parts**
- **Extract 5 Regions**

- **Perspective Transform**
- **Estimate 3D Vertexes**
- **Construct the 3D Background**

ceiling | leftwall | rearwall | rightwall | floor