Lehrstuhl für Datenverarbeitung

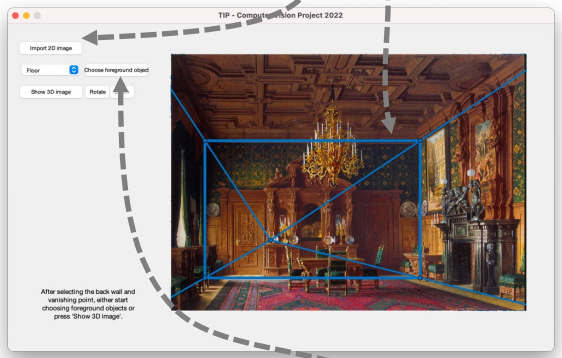
Tour into the picture

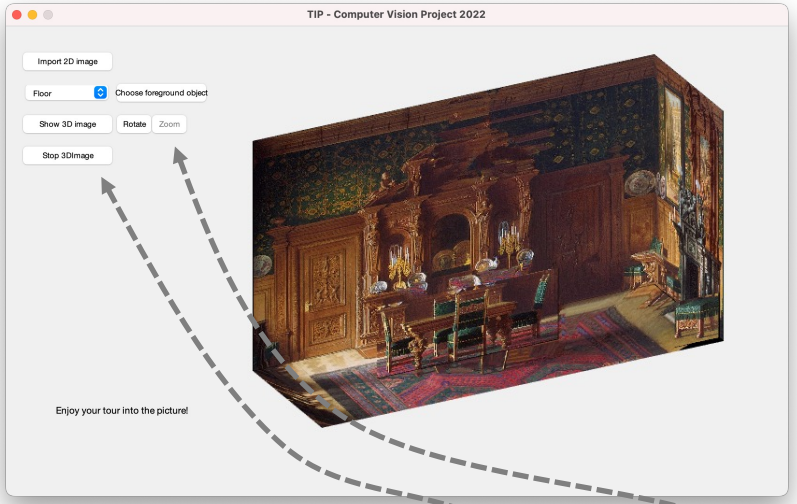
Think inside the box!

Technische Universität München

1 2D image selection

- Choose your favorite image
- Select back wall & vanishing point



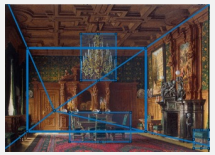


2 Chop up your image

- Generate vanishing lines
- Separate image into 5 walls with `poly2mask()`

3 Select foreground object

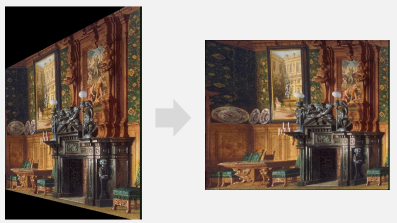
- Select rectangle around foreground object
- Fill background with `exemplarInpaint()`
- Select position of foreground object



4 Warp walls

Use 4-point-algorithm:

- Determine transformation
- Estimate homography matrix with `imwarp()`
- Transform pixel coordinates



5 Boxify image

- Create 3D-box out of 5 walls
- Place foreground objects

6 Rotate and zoom around your new room

- Use Rotate or Zoom to navigate inside the image

Computer Vision Challenge 2022, Group 32:

- Simon Wallner (S)
- Kaustabh Paul (K)
- Luca Obwegs (L)
- Mohamed Fares Sahli (Mo)
- Malik Mandhouj (Ma)

Difficulties

- Foreground object positioning
- Error free warping
- Background inpainting
- Stable Graphical user Interface
- Blending walls depending on camera position

Task division

- Foreground object separation (L)
- Graphical user interface (S, L)
- Image segmentation (K, S)
- Warping (K)
- 3D Box (S, Mo, Ma, L, K)
- Wall in/out blending (K)

Algorithms

- `poly2mask()`, `imwarp()`, `exemplarInpaint()` from Matlab Image Processing Toolbox

Scan me!