

A New Retexturing Method for Virtual Fitting Room Using Kinect 2 Camera

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STACC



Outline

- Introduction to Retexturing
- Proposed Method
- Results
- Conclusion

Introduction

- Replacing the texture of a garment with a new custom texture
- Applications:
 - Virtual Fitting Room
 - Movie/Game Industry

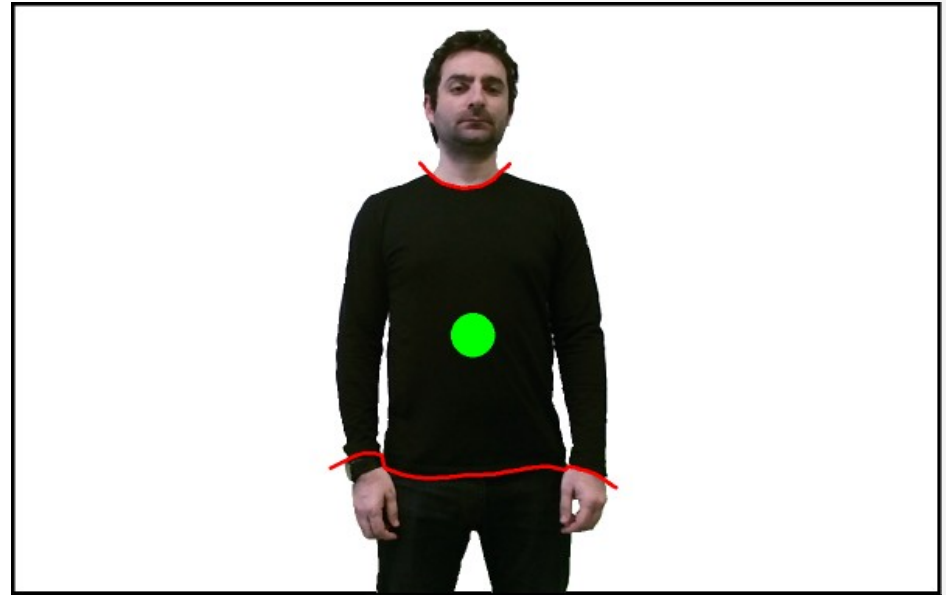


Proposed Method

1. Segmentation
2. Coordinate Mapping
3. Shading

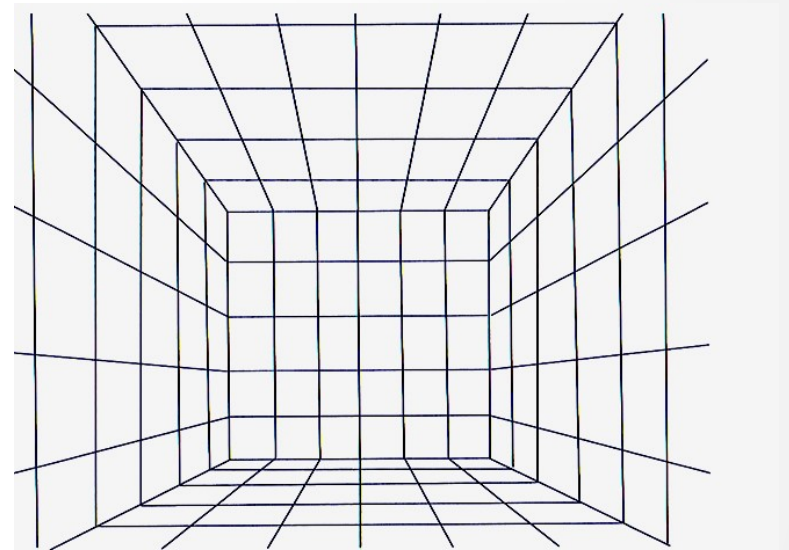
Segmentation

- Threshold by Object Distance (*automatic*)
- Threshold by Markers (*added manually*)



Coordinate Mapping

- For every pixel of the segmented area corresponding texture domain coordinates are computed
- Coordinate map from screen coordinates (x,y) to real world coordinates (X,Y,Z) is used
- Only the X and Y (real world) coordinates are considered when calculating the texture domain coordinates – this creates a nice perspective change effect



Coordinate Mapping

We have a coordinate mapping function:

$$\omega : (x, y) \rightarrow (X, Y, Z)$$

Using this function texture domain coordinates can be computed:

$$u = f_u(x, y) = W \frac{\omega_x(x, y) - X_{min}}{X_{max} - X_{min}}$$

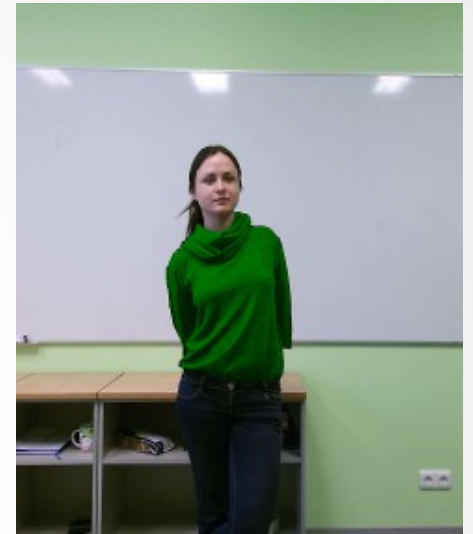
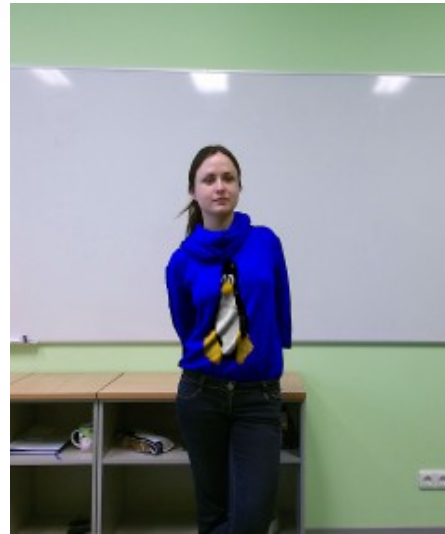
$$v = f_v(x, y) = H \frac{\omega_y(x, y) - Y_{min}}{Y_{max} - Y_{min}}$$

Shading

- Original color is known
- New texture color is known
- New texture color affected by the scene lighting conditions is not known

- Hard to do when the segmented area is dark
- Histogram equalization is used

Results



Further Work

- A different approach was later tried
 - Infrared Images



Results



Conclusion

- Retexturing Method was proposed consisting of the following steps:
 - Segmentation
 - Coordinate Mapping
 - Shading
- Realistic Results
- Application for Virtual Fitting Room
- Many other possibilities in Looking at People, such as virtual and augmented reality

Thank You!