

Spracovanie farebného obrazu

Color 2 Gray

Gray 2 Color

Odstraňovanie tieňov

13.5.2015

- RGB to gray
 - pôvodný obraz
 - R, G, B
 - šedotónový
 - úrovne šedej

Pure Red (255,0,0)



Equivalent Gray (76,76,76)



Pure Green (0,255,0)



Equivalent Gray (150,150,150)



Pure Blue (0,0,255)



Equivalent Gray (29,29,29)



Cyan (0,255,255)



Equivalent Gray (179,179,179)



Magenta (255,0,255)



Equivalent Gray (105,105,105)



Yellow (255,255,0)



Equivalent Gray (226,226,226)



Brown (158,85,54)



Equivalent Gray (103,103,103)



Olive (155,160,52)



Equivalent Gray (146,146,146)

















Purple (100,0,150)



Equivalent Gray (47,47,47)

















- RGB to gray
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Pure Red (255,0,0)		Equivalent Gray (76,76,76)	
Pure Green (0,255,0)		Equivalent Gray (150,150,150)	
Pure Blue (0,0,255)		Equivalent Gray (29,29,29)	
Cyan (0,255,255)		Equivalent Gray (179,179,179)	
Magenta (255,0,255)		Equivalent Gray (105,105,105)	
Yellow (255,255,0)		Equivalent Gray (226,226,226)	
Brown (158,85,54)		Equivalent Gray (103,103,103)	
Olive (155,160,52)		Equivalent Gray (146,146,146)	
Purple (100,0,150)		Equivalent Gray (47,47,47)	

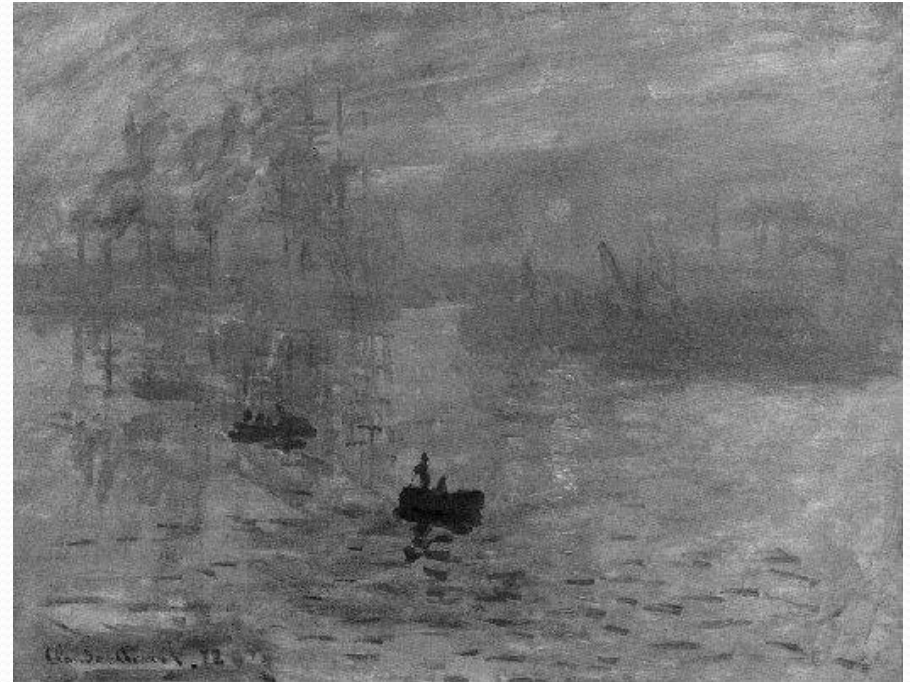
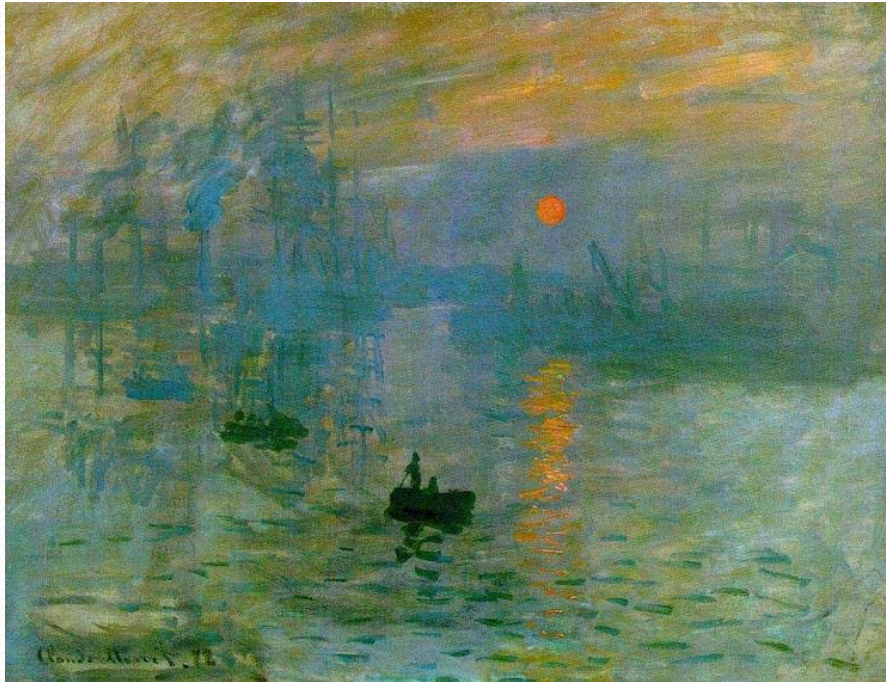
$$x = (R + G + B)/3$$

- RGB to gray
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Pure Green (0,255,0)		Equivalent Gray (150,150,150)	
Pure Blue (0,0,255)		Equivalent Gray (29,29,29)	
Cyan (0,255,255)		Equivalent Gray (179,179,179)	
Magenta (255,0,255)		Equivalent Gray (105,105,105)	
Yellow (255,255,0)		Equivalent Gray (226,226,226)	
Brown (158,85,54)		Equivalent Gray (103,103,103)	
Olive (155,160,52)		Equivalent Gray (146,146,146)	
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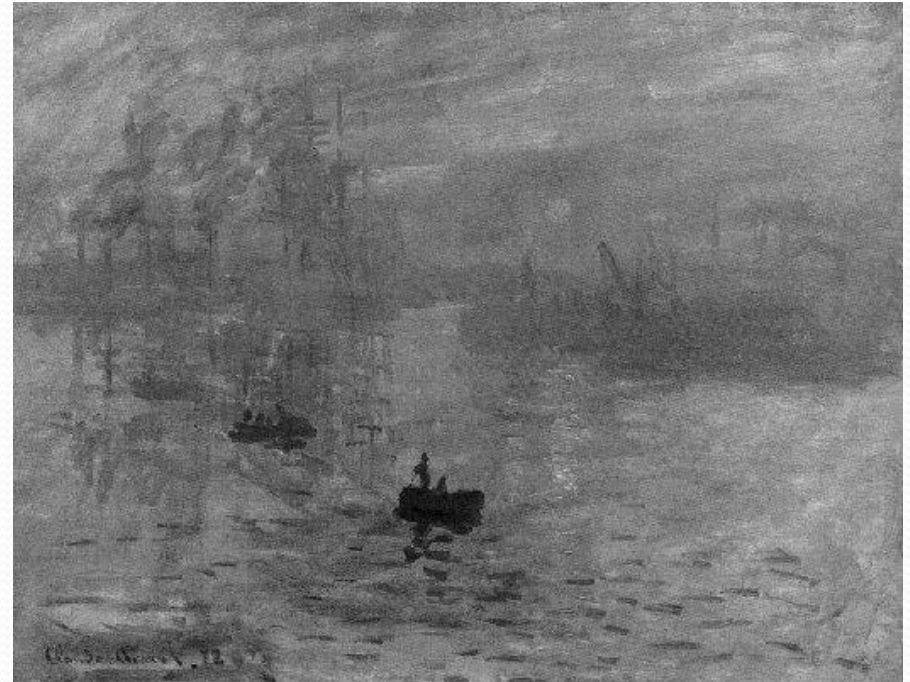
$$x = 0.299R + 0.587G + 0.114B$$

Color to gray - matlab



Color to gray - matlab

- `rgb2gray`



Color to gray



(a) CIECAM97 Lum



(b) $L^*a^*b^*$ Lum.



(c) XYZ Lum.



(d) YCrCb Lum.



(e) Auto Contrast



(f) Color2Gray

Color to Gray

- Universal Color to Gray Conversion
 - <http://www.mathworks.com/matlabcentral/fileexchange/27578-universal-color-to-gray-conversion>

Gray to color









- zahŕňa segmentáciu obrazu
- prístupy
 - farbenie podľa vzoru
 - čiasotčne automatické (Levin et al.)

Gray to color

- zahŕňa segmentáciu obrazu
- prístupy
 - farbenie podľa vzoru
 - čiasotčne automatické (Levin et al.)
- problém

Gray to color

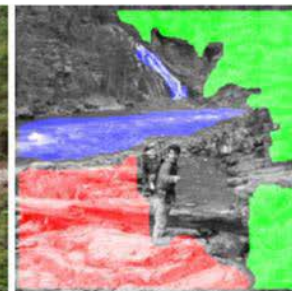
- zahŕňa segmentáciu obrazu
- prístupy
 - farbenie podľa vzoru
 - čiasotčne automatické (Levin et al.)
- problém

(0,170,0)		(100,100,100)	
(230,53,0)		(100,100,100)	
(80,83,240)		(100,100,100)	
(230,14,200)		(100,100,100)	

Gray to color



(a) Levin *et al.*'s colorization. Left: dozens of user drawn scribbles (some very small). Right: resulting colorization.



(b) Reference image along with a partial segmentation.



(c) Our classification and resulting colorization.

Figure 2: (a) The method of Levin *et al.* might require the user to carefully place a multitude of appropriately colored scribbles. (b) Our approach requires an example image with a few user-marked or automatically segmented regions, and produces a comparable colorization (c).

Gray to color



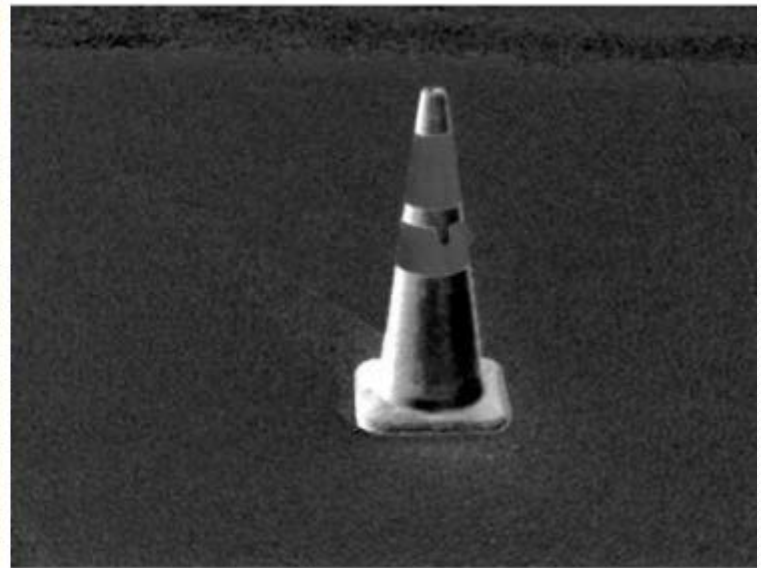
Gray to color

- Gray image to Color image conversion
 - <http://www.mathworks.com/matlabcentral/fileexchange/8214-gray-image-to-color-image-conversion>

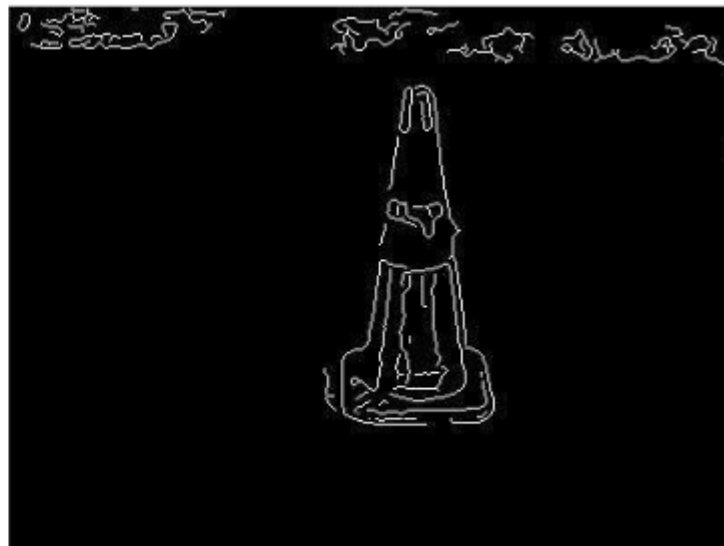
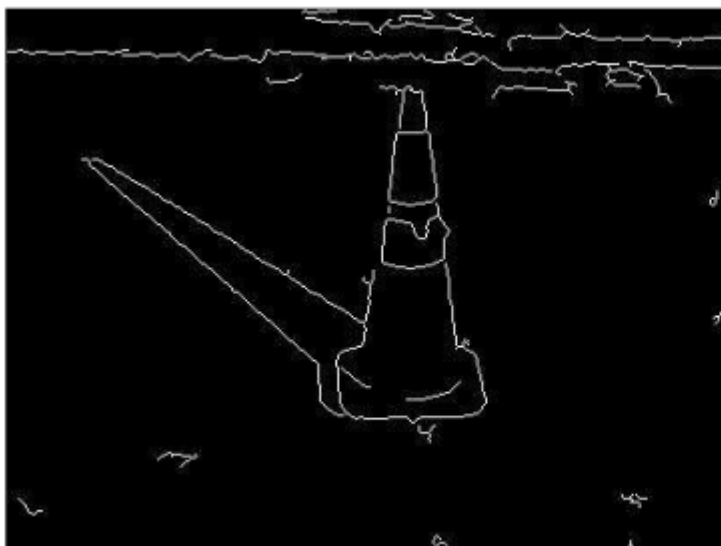


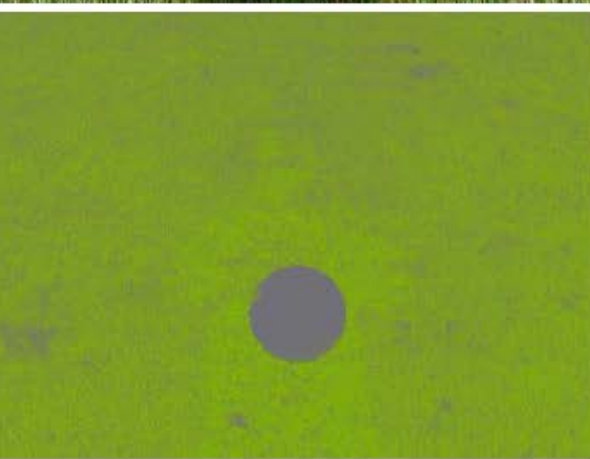
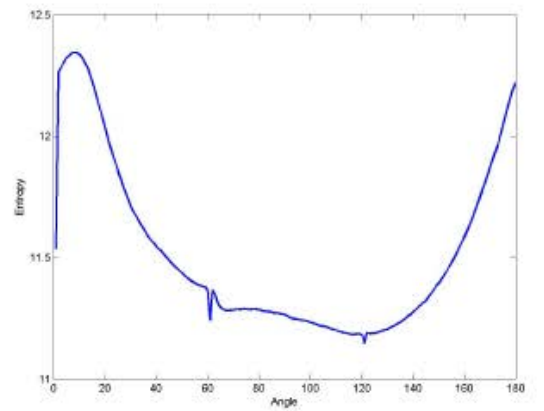
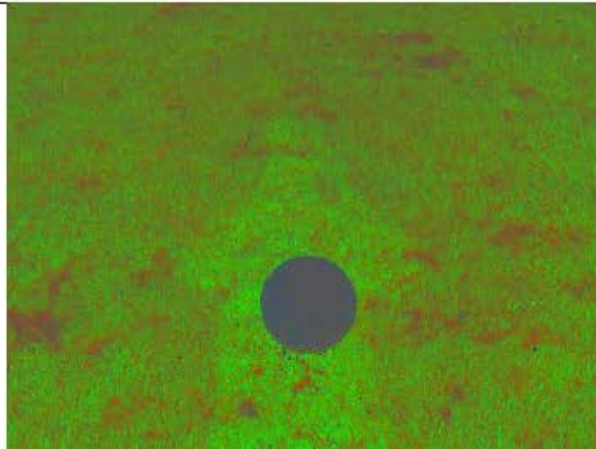
Odstraňovanie tieňov

Odstraňovanie tieňov



Odstraňovanie tieňov

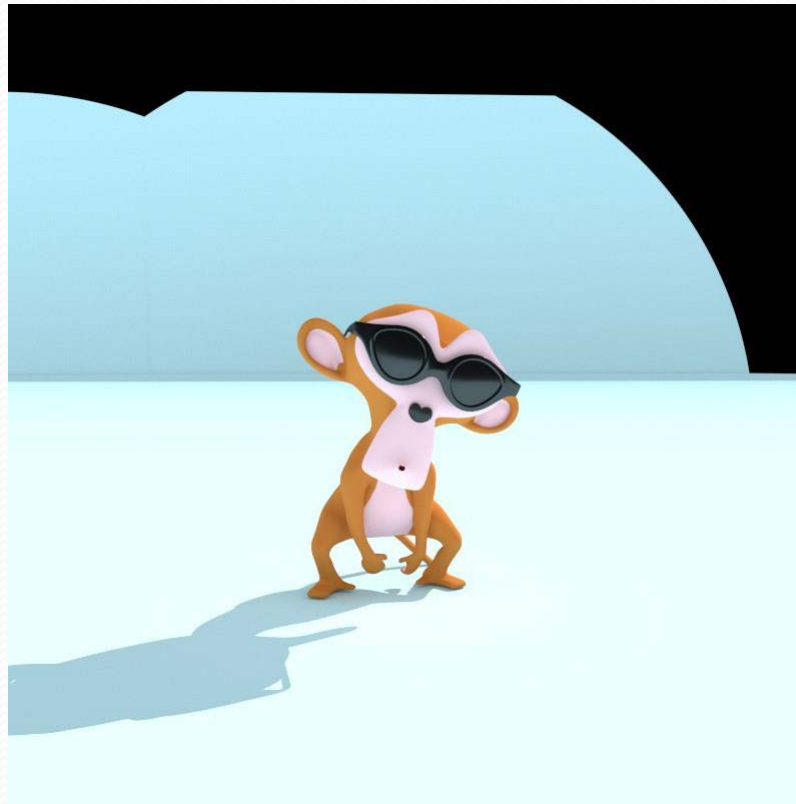


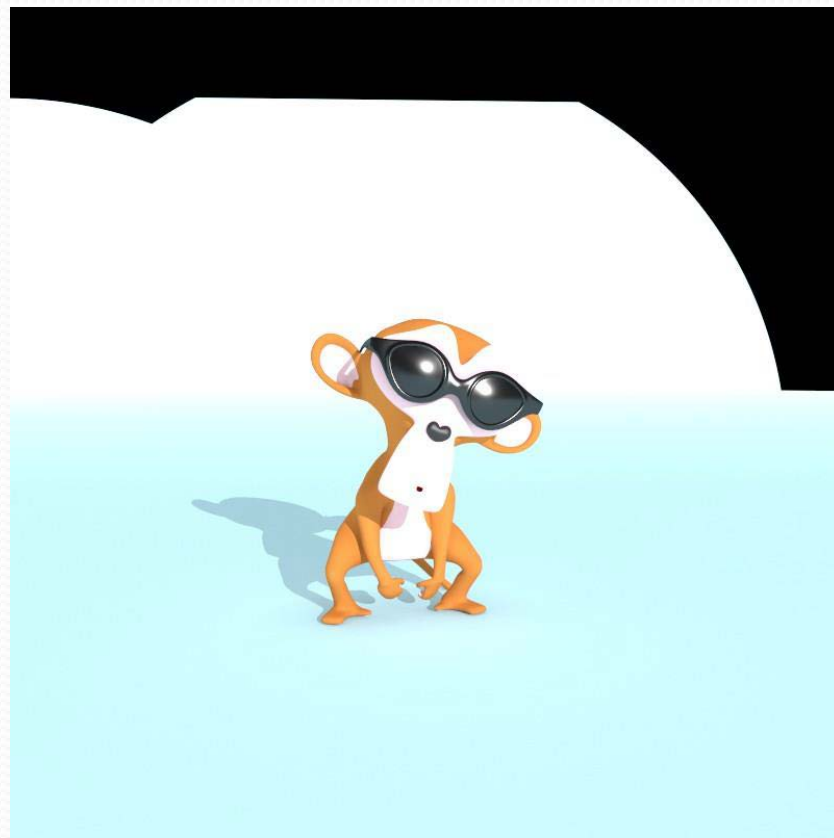
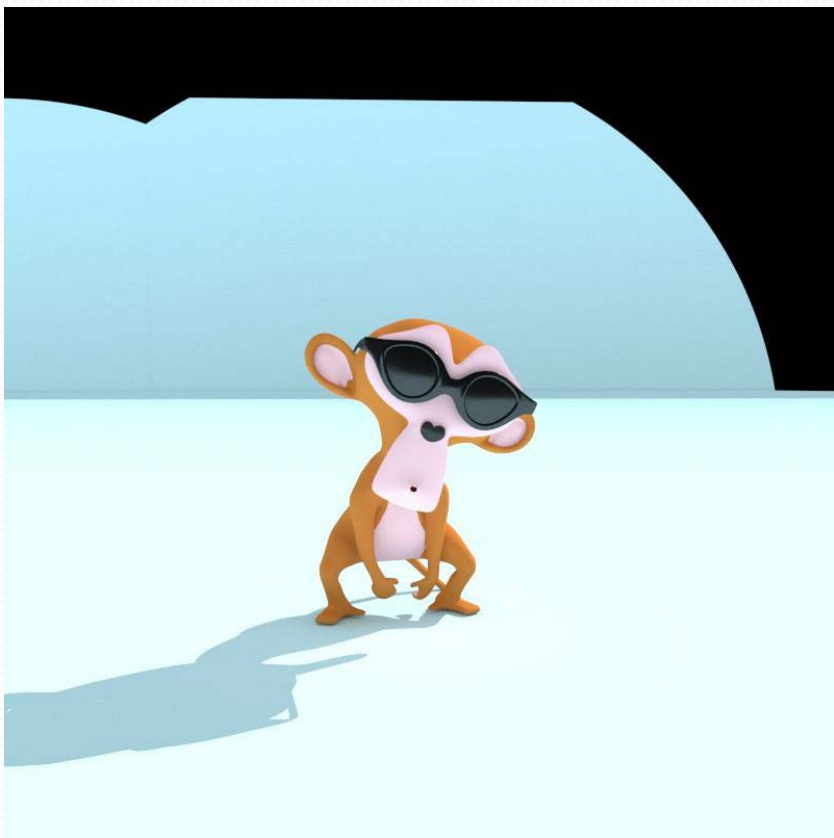


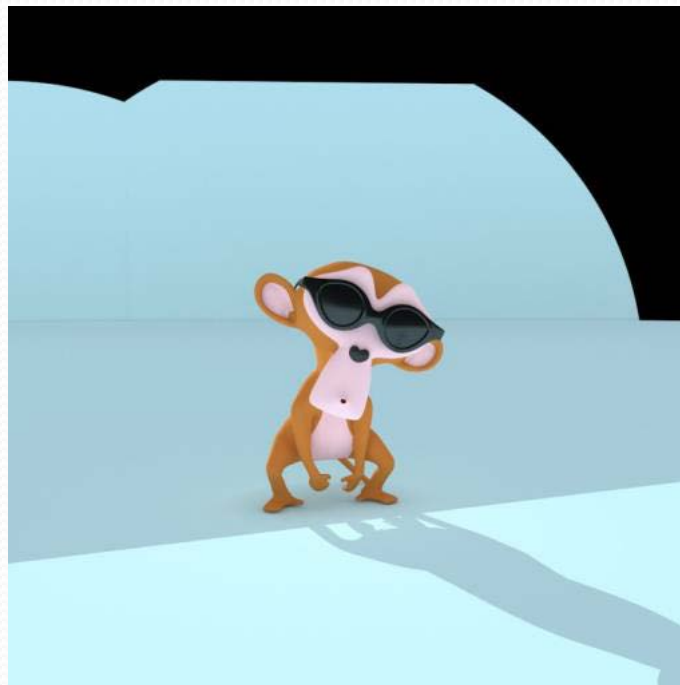
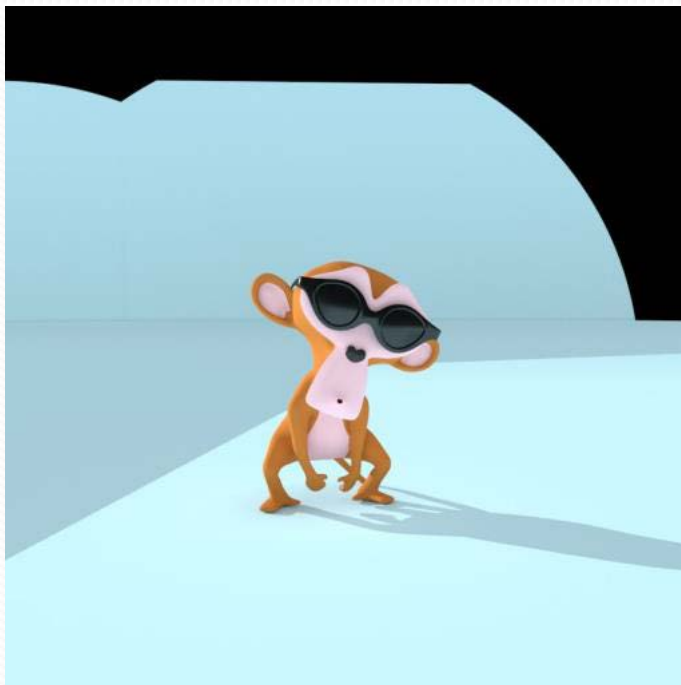
Obmedzenia

- Iba tieňe s ostrými hranami
- Žiadne prekryvanie objektu a hranice teňa
- Rekonštrukčné metódy majú problém s textúrami

Úloha 5 -Odstraňovanie tieňov







Úloha 5 - Odstraňovanie tieňov

- www.sccg.sk/~kucerovala/suzie.zip
- Načítajte obrázky
- Vytvorte obrázok s odstránenými tieňmi
- Zobrazte farby riadka 400 z výsledného obrázka v RGB kocke
 - `scatter3(x,y,z,4,color)`
 - `x,y,z` – súradnice bodu v 3d
 - `color` – farba bodu