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)	

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

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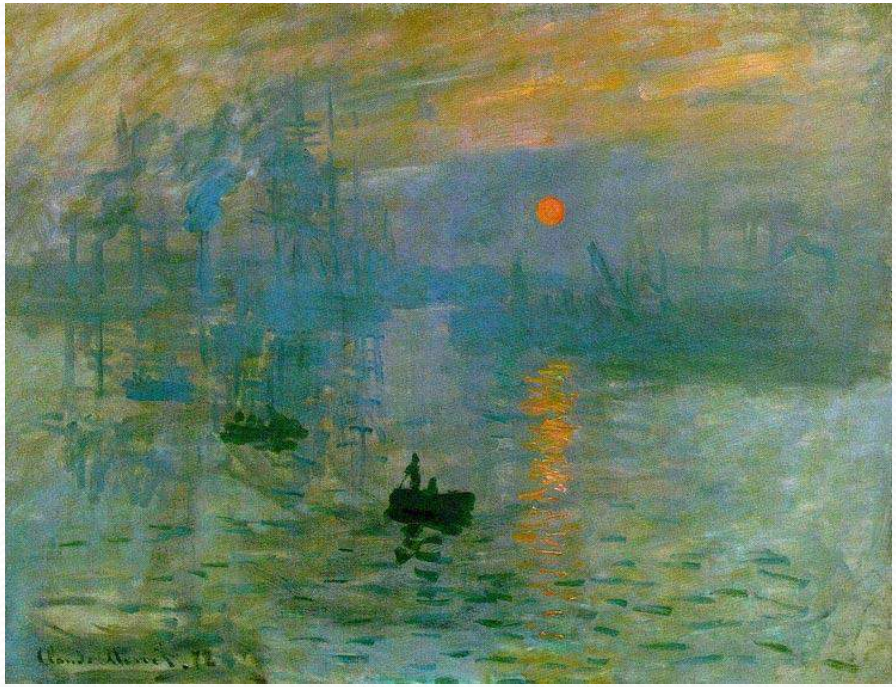
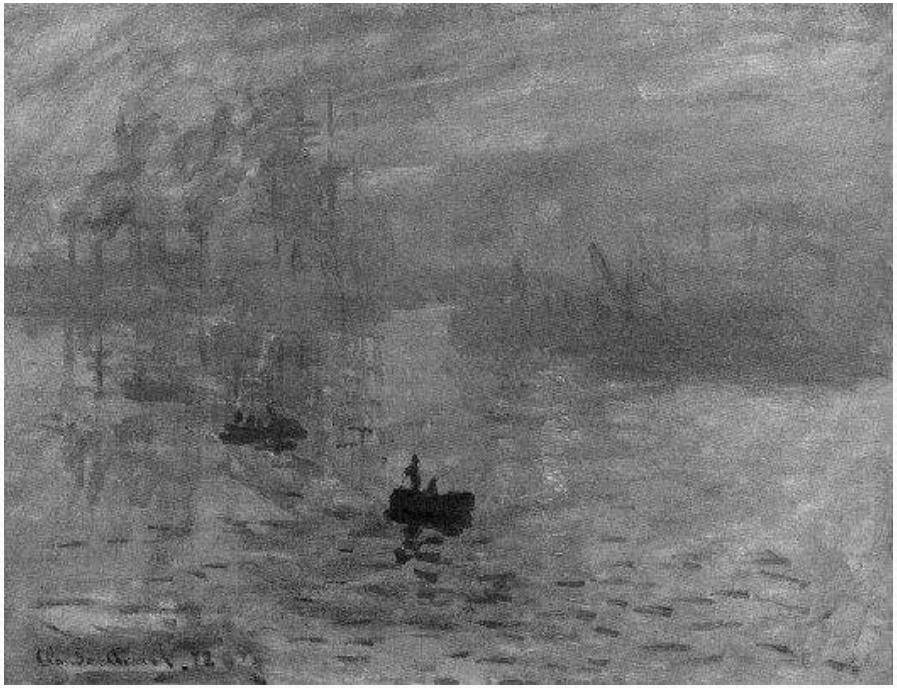
$$x = 0.299R + 0.587G + 0.114B$$

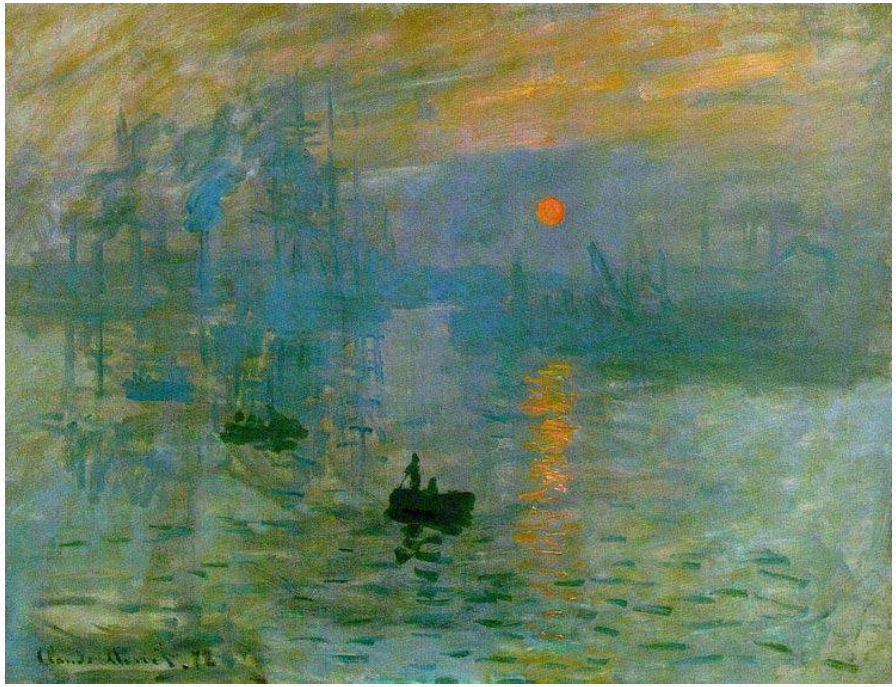
Color to gray - matlab

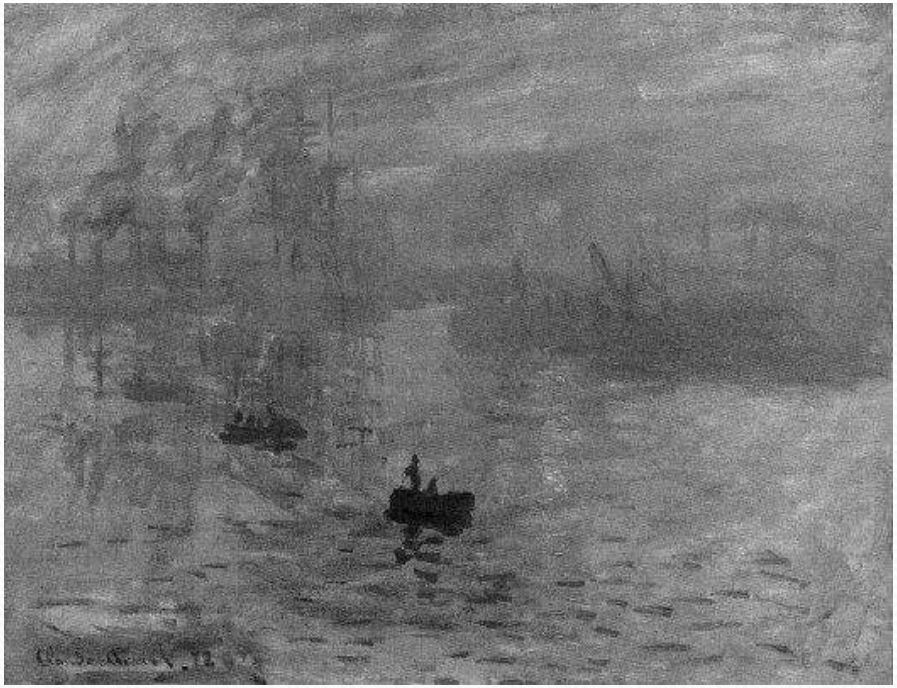




Color to gray - matlab

- 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

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- problém

Gray to color

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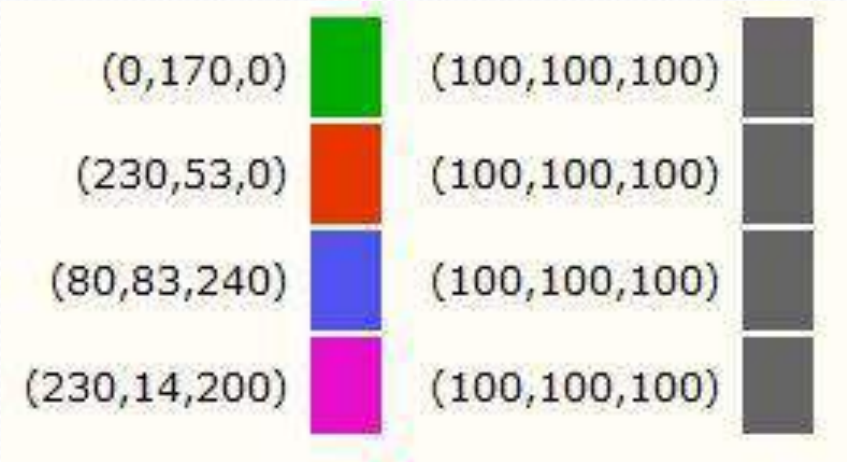
- prístupy
  - farbenie podľa vzoru
  - čiasotčne automatické (Levin et al.)

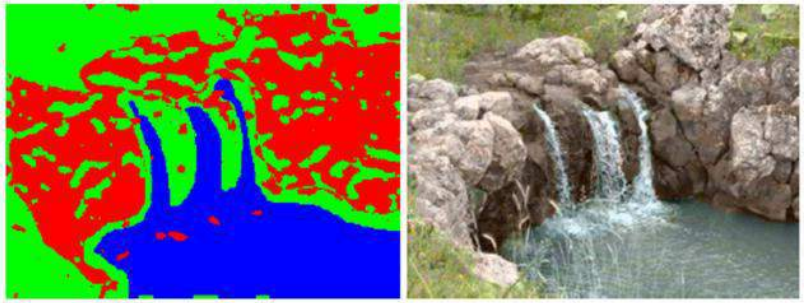
- problém



Gray to color

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

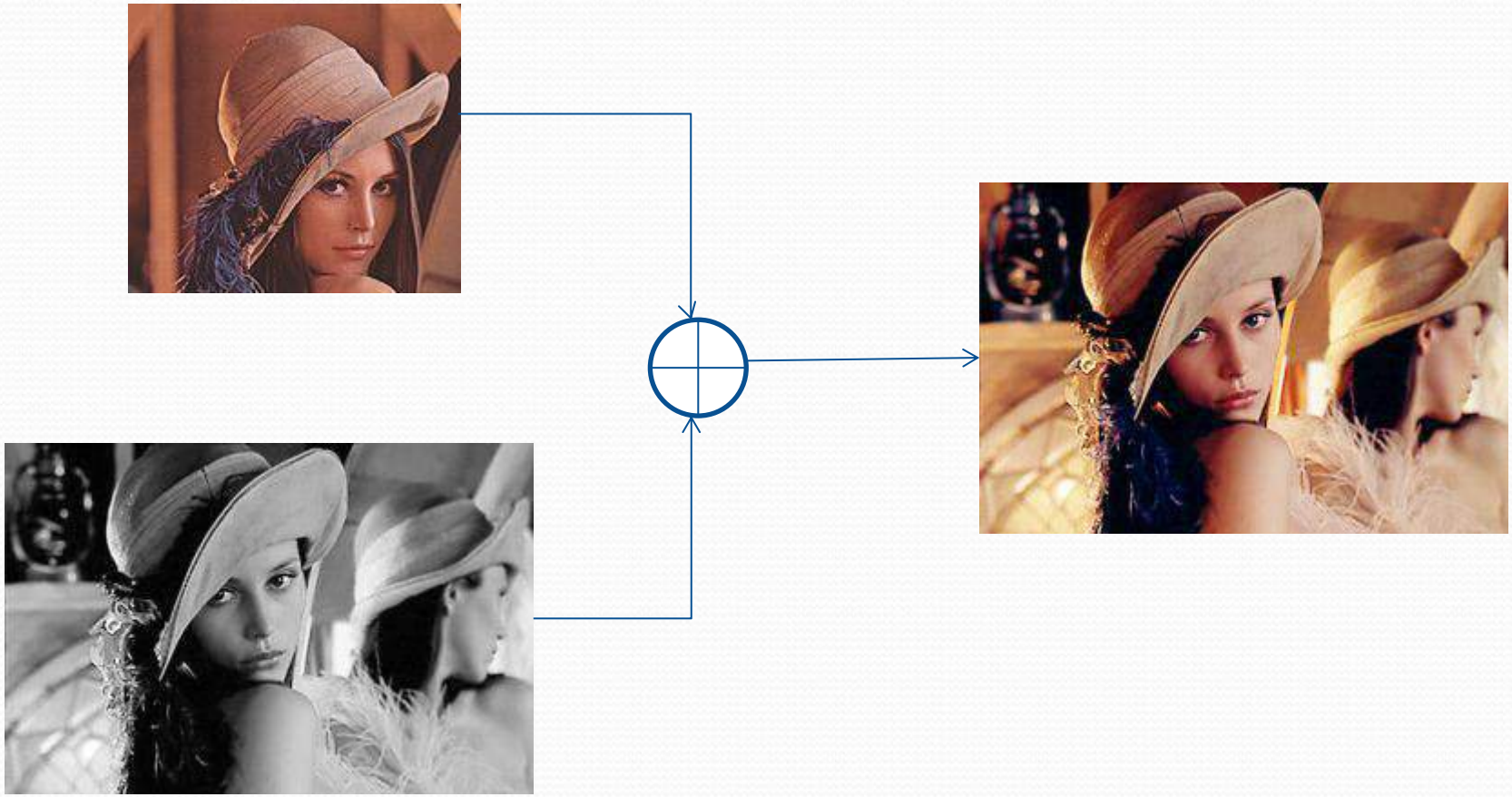
(b) Reference image along with a partial segmentation.



(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

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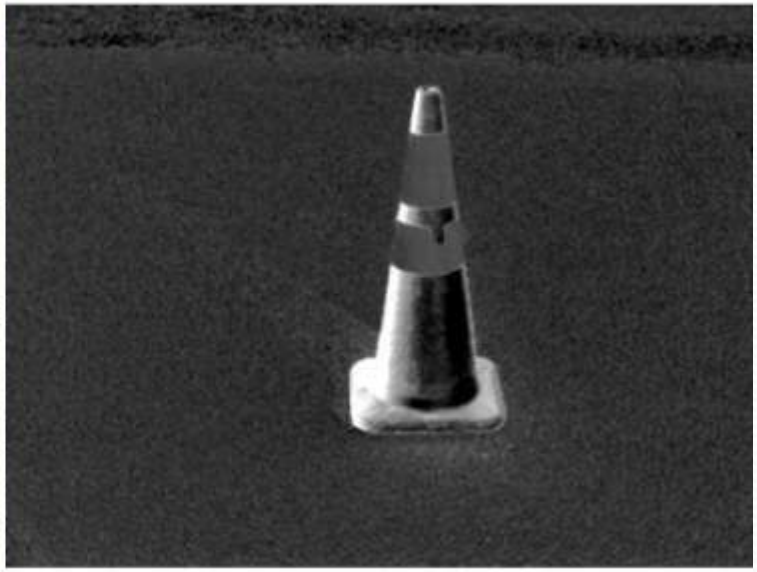
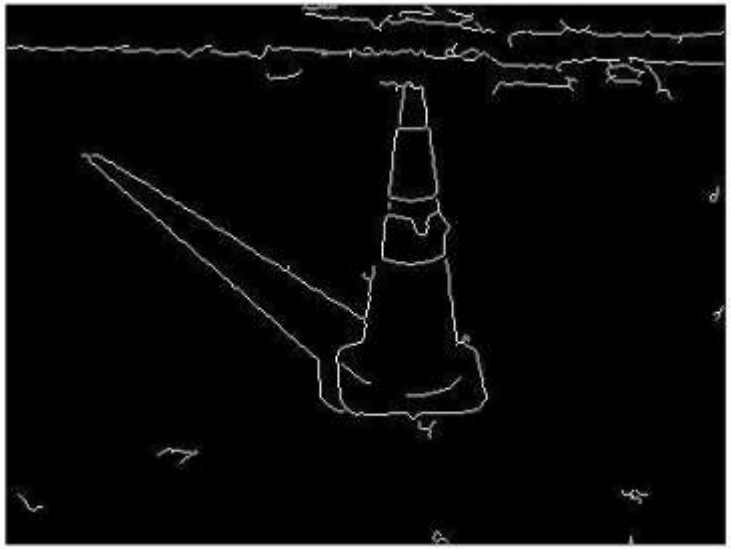
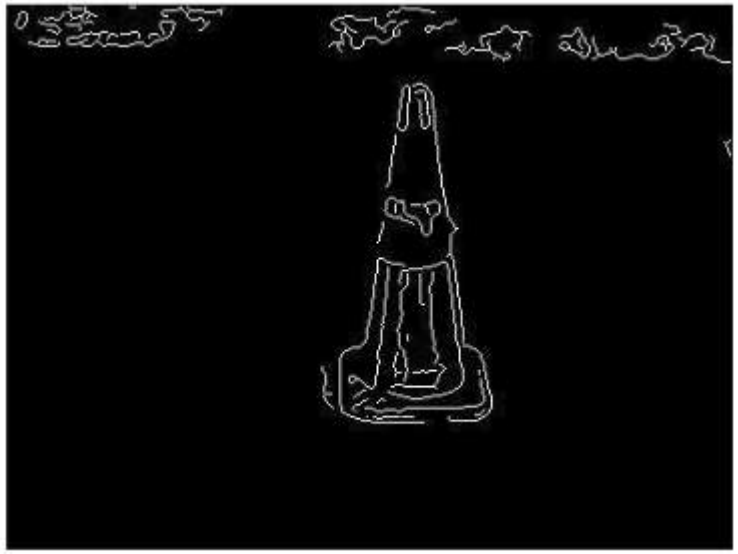
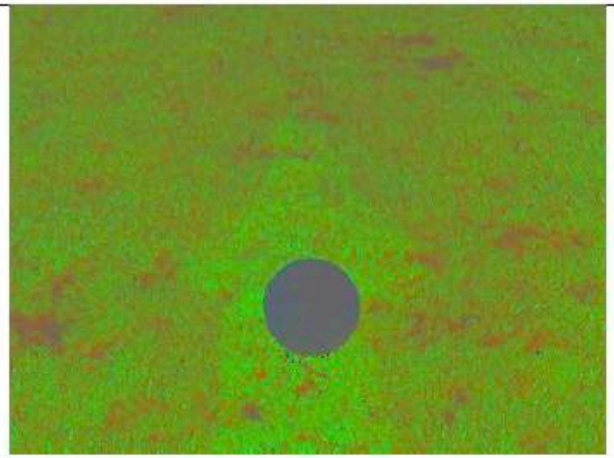
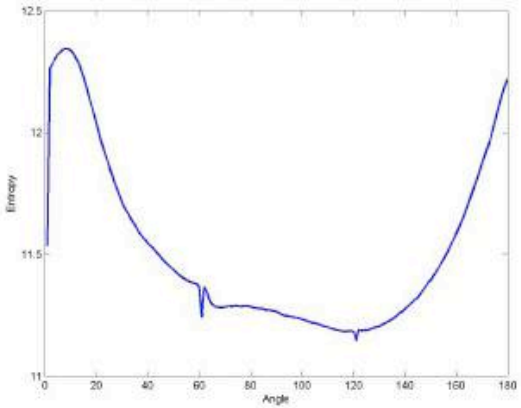


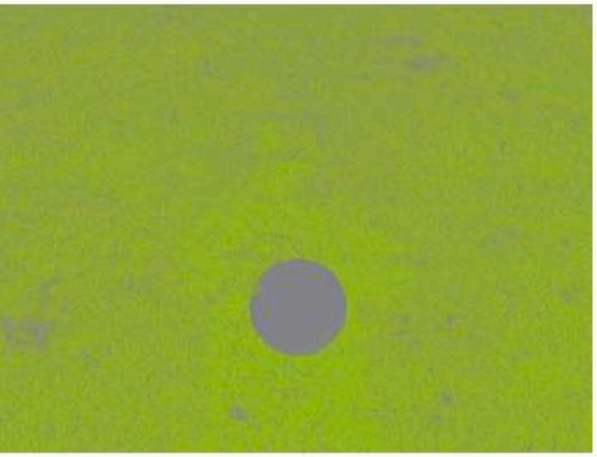
Odstraňovanie tieňov







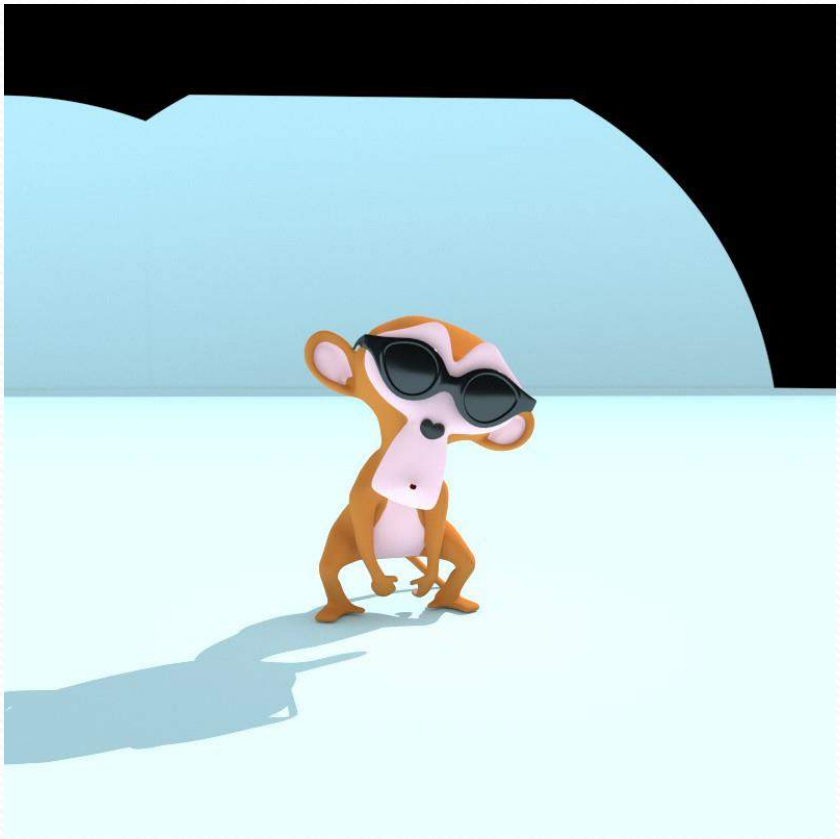

12.5
12
11.5
11
Entropy
0
20
40
60
80
100
120
140
160
180
Angle

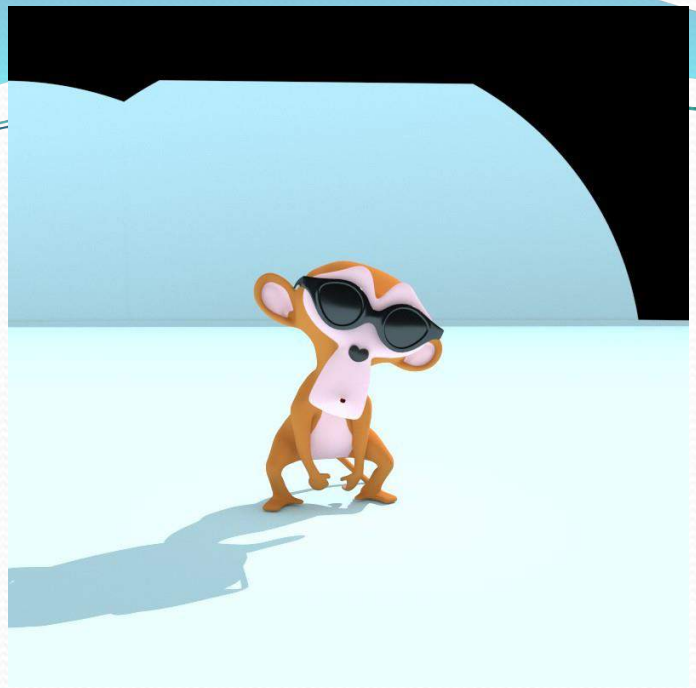


Obmedzenia

- Iba tiene s ostrými hranami
- Žiadne prekrývanie objektu a hranice teňa
- Rekonštrukčné metódy majú problém s textúrami

Úloha 4 -Odstraňovanie tieňov





Úloha 4 - Odstraňovanie tieňov

- Stiahnite si priečinok suzie
- 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