

* Tech

Polarized Light for Segmentation

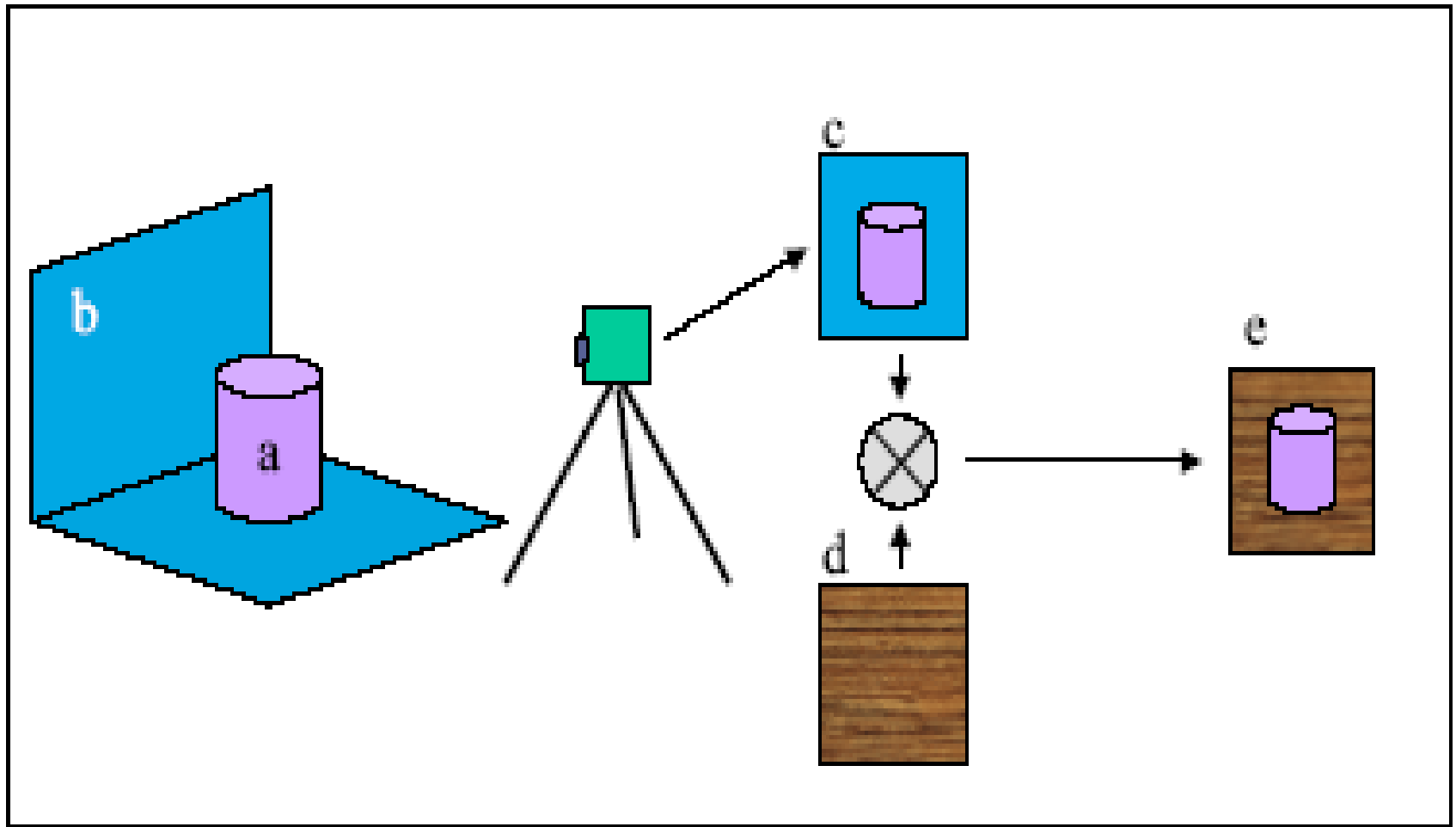
-- Segmentation with invisible keying signal (CVPR 2000)

Hao Du

Email: duhao@fudan.edu.cn

Fudan University, P.R.China

Chroma keying process



Difficulties

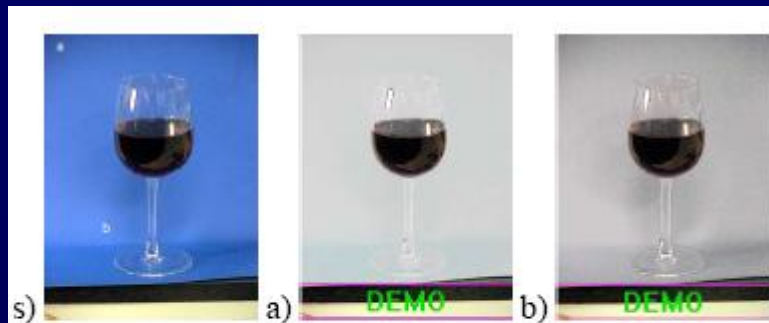


Figure 2. Background lighting problem. s) Selection of two possible reference sites for background color. a) Composite result for selection (a), we can see blue spill. b) Composite result for selection (b). We can see the brightness difference due to the different background reference points.

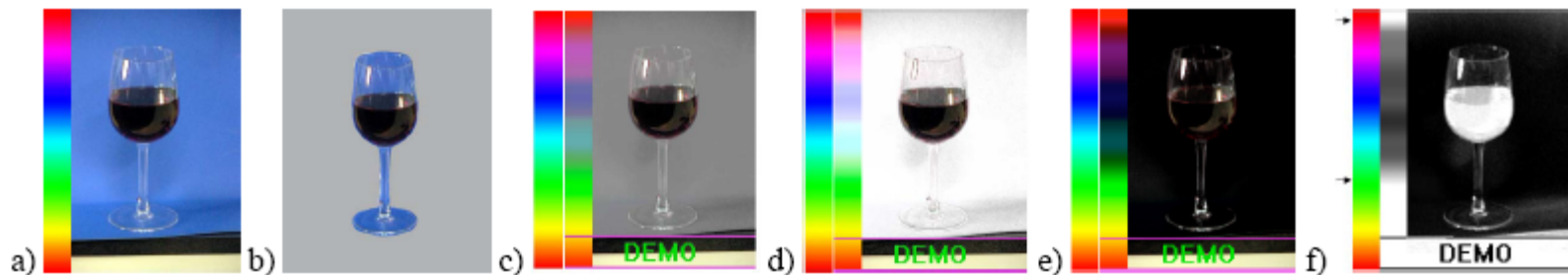
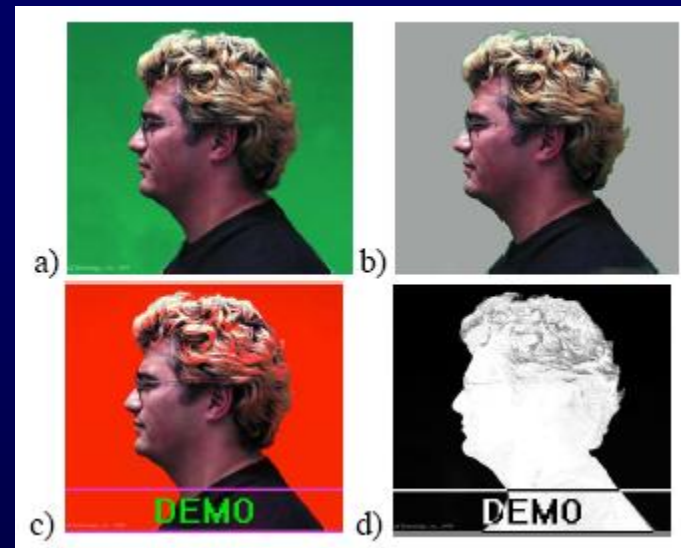


Figure 4. Blue Spill problem - transparent object. a) Original image - a glass over a blue screen with color spectrum bar attached to it, note that the human vision perceives it as it really is - a transparent glass over a blue background. b) Manually Cutting the glass and pasting it over a neutral gray background disables the human vision correction mechanism and reveals the real situation - the glass looks as a very blue glass, and this is what the blue spill algorithm should cope with. c) Compositing the image over a neutral gray background shows that the algorithm was able to eliminate almost every trace of the blue spill. The original color bar was attached to the image on the left, and as we can see that the blue spill correction algorithm caused a considerable degradation of colors. d,e) The color degradation is more apparent when the image is composite over a white or black background. f) The extent of the spectrum range affected by the blue spill correction algorithm is shown at the produced matte (marked with arrows).

Studio Setting

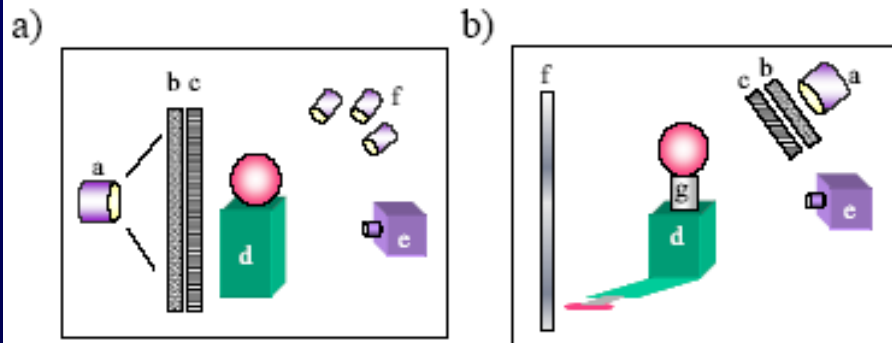
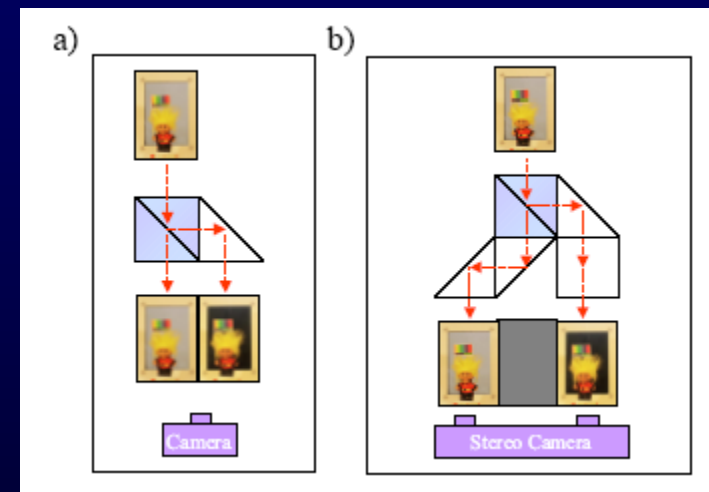


Figure 6. Studio setup. a) Back-lit setup: light from light source *a* passes through a diffuser *b* and through a linear polarizer *c* into the camera *e*. The foreground object *d* is illuminated by the non polarized ambient light *f*. b) Silver-screen setup: light from light source *a* passes through a diffuser *b* and through a linear polarizer *c*. The polarized light is reflected from the silver-screen *f* and it also casts shadows. The foreground objects *d* de-polarizes the light that illuminates it. The pole *g* is covered with silver-screen cloth and appear as background objects and thus allowing the ball to float above the box.



Result

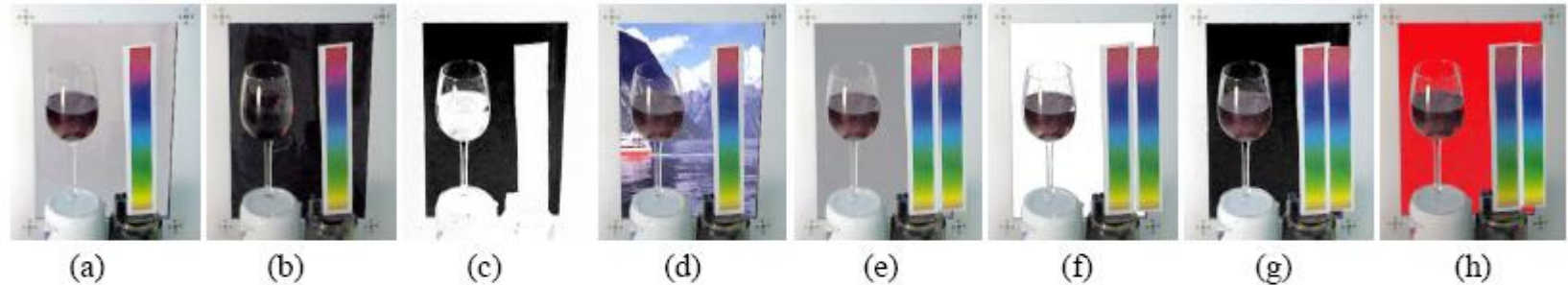
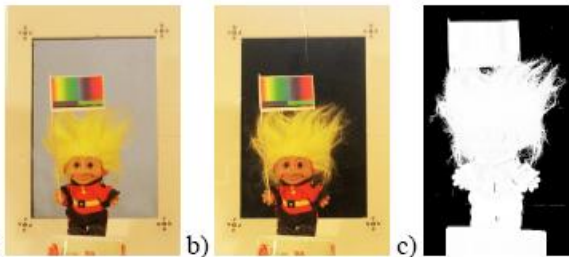


Figure
was attached
background
d) Composite
g) Composite
images th



to check color fidelity. The original color bar from the gray image
the background appear as light gray. b) “Out-of-phase image” the
at the matte expresses transparency and that it is not affected by color.
ic gray background. f) Composite over a synthetic black background.
ite over a synthetic red background. We can see that in all composite

