An Interactive Tool for Gamut Masking
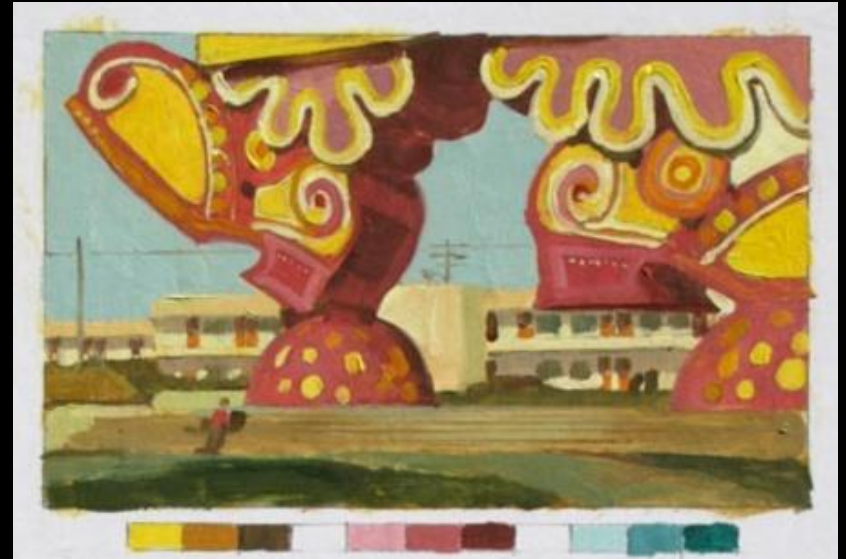
Ying Song   Cheryl Lau   Sabine Süsstrunk

École Polytechnique Fédérale de Lausanne (EPFL)

Warm Version

Original Image

Cool Version

Images courtesy of James Gurney

Original Image | Warm Version | Cool Version

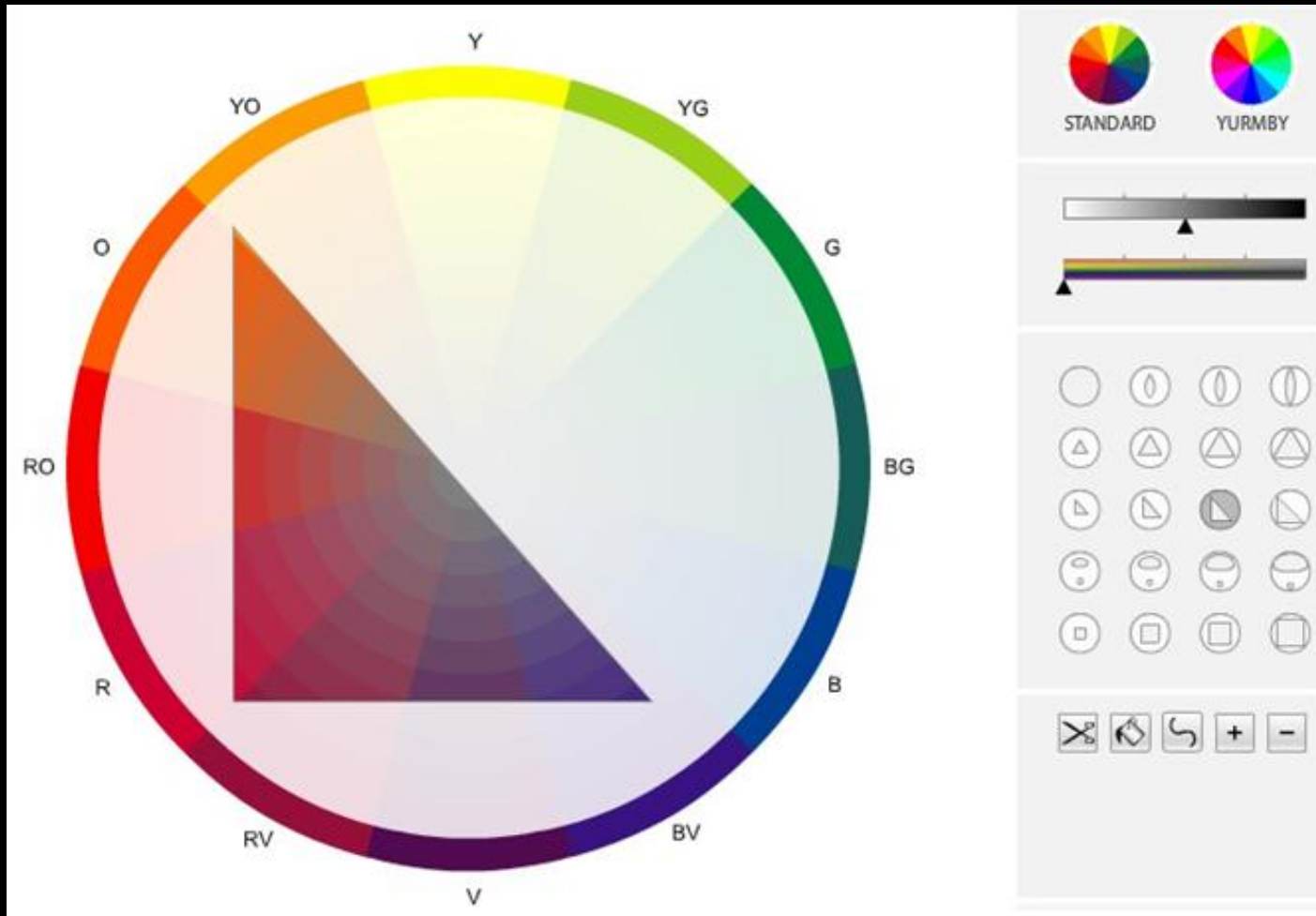Original Image | Warm Version | Cool Version

Image courtesy of Jerry Ferguson
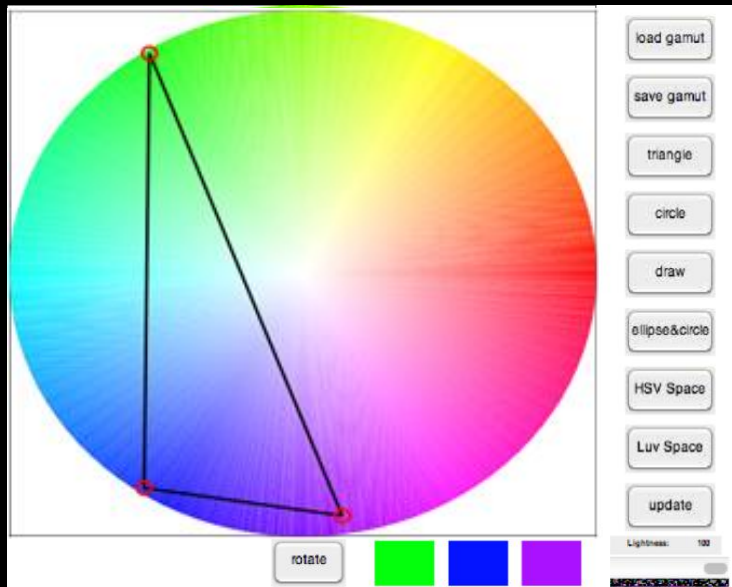
Painter's Gamut Mask Tool
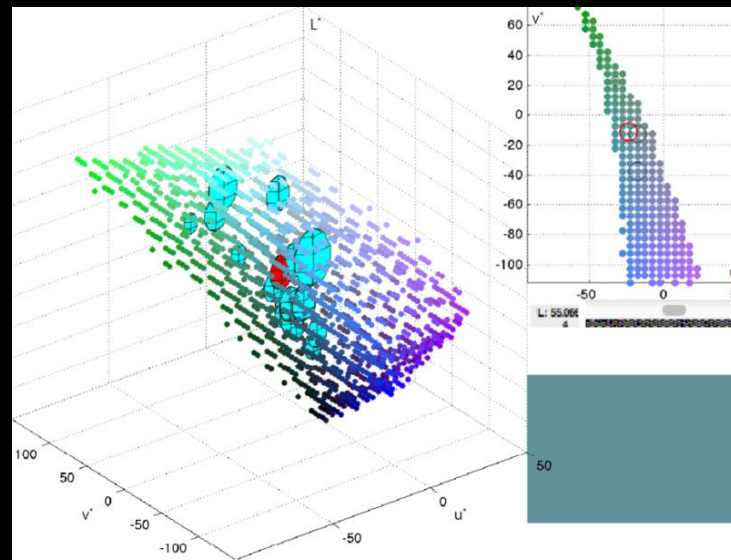
Our Tool

Mask Panel

Image Panel

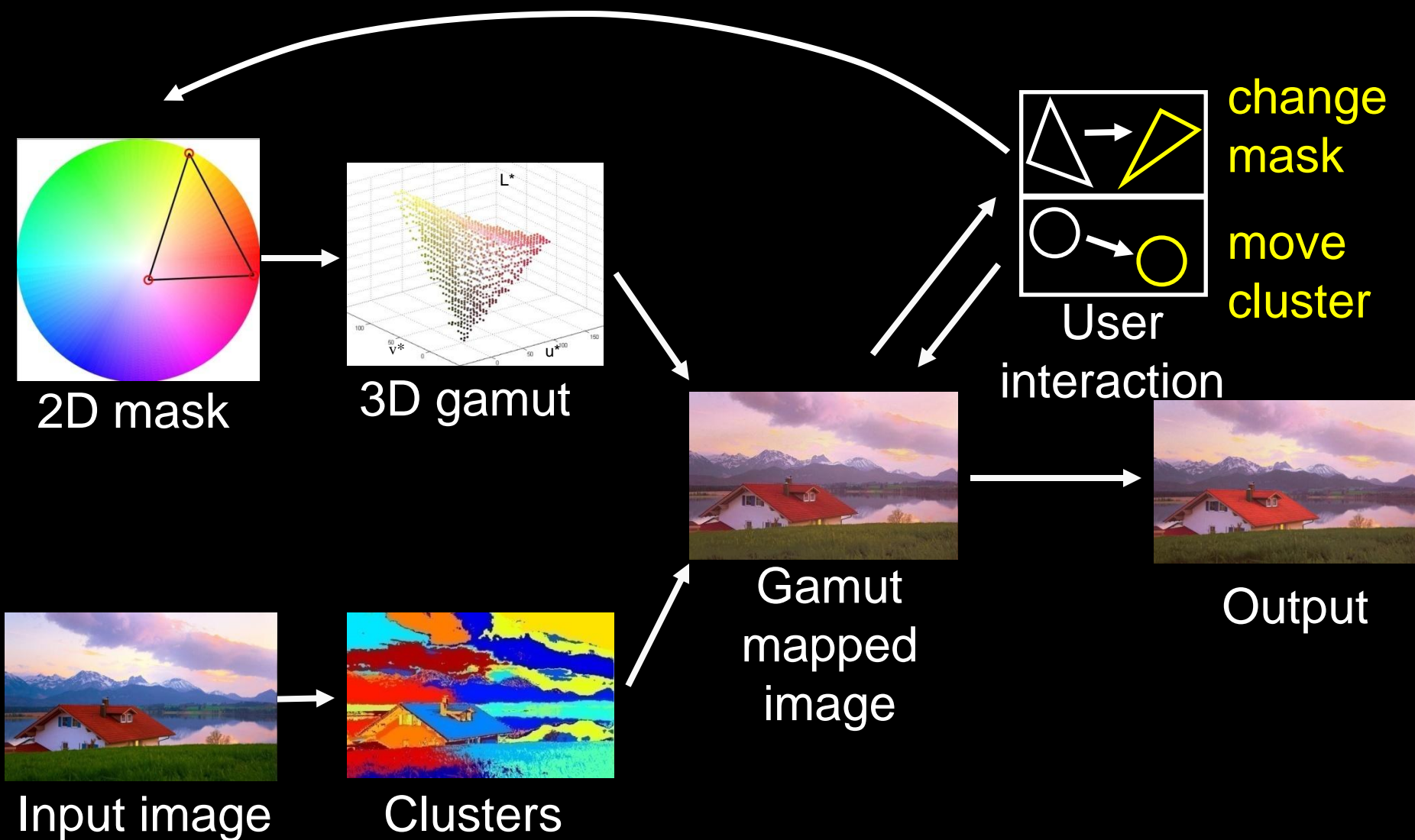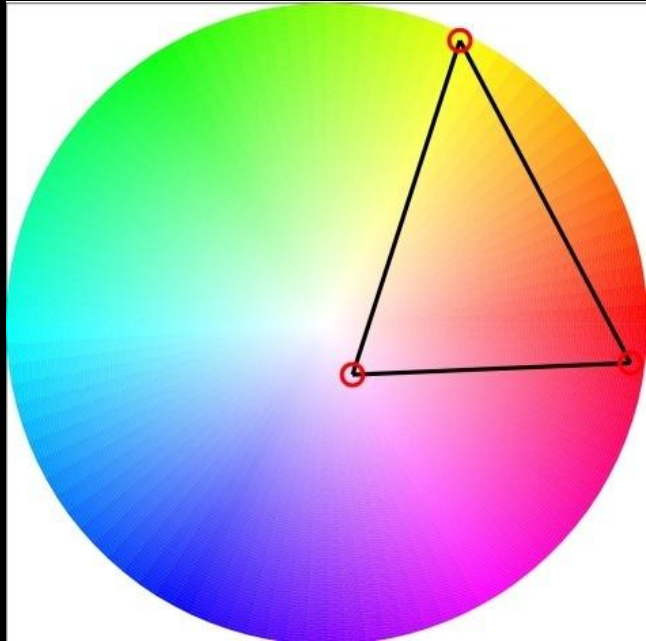Image of birds courtesy of Kodak

Gamut Panel

Related Work

- Interactive gamut visualization and gamut mapping tools: [Farup et al. 2000], [Stone et al. 1988], [Kalra 1994]

- Richard Robinson's online gamut masking tool: Masks are intended to be printed and used as a reference when painting

- Cluster-based gamut mapping [Lau et al. 2011]

- Commercial software: Adobe Photoshop, Adobe Lightroom, Adobe Speed Grade and FilmLight Baselight
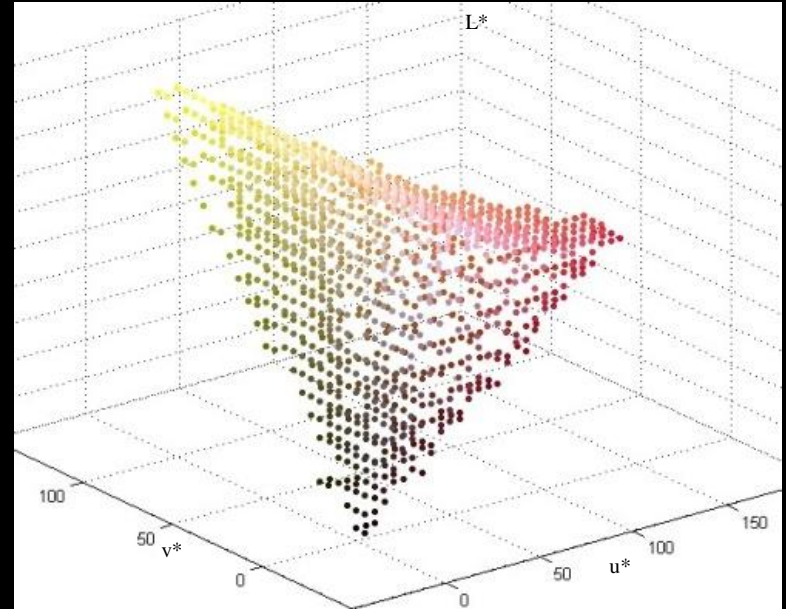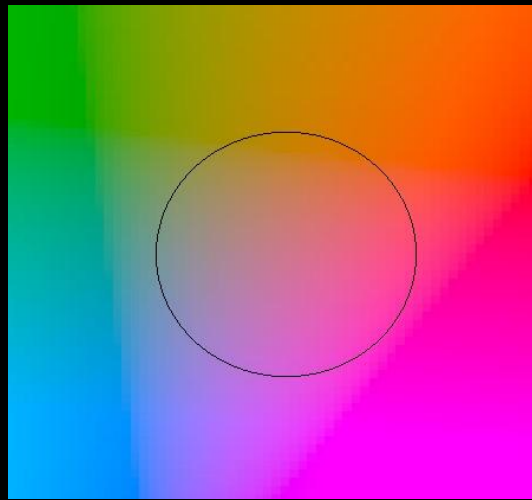
Method Overview

change
mask

move
cluster

2D mask

3D gamut

User
interaction

Input image

Clusters

Gamut
mapped
image

Output

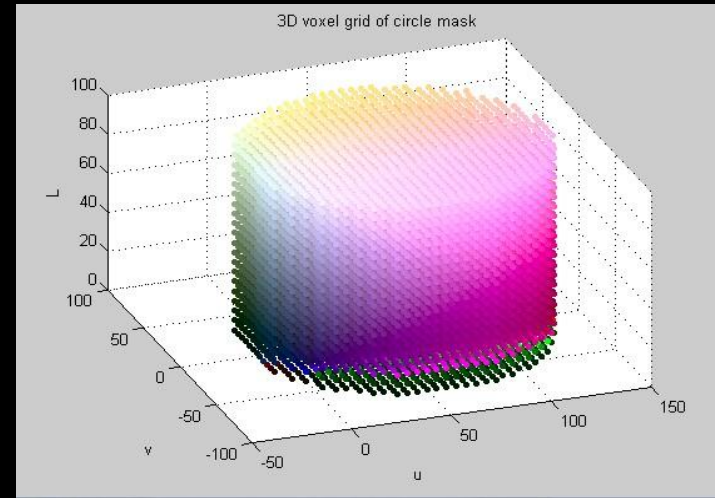Image courtesy of Moyan Brenn
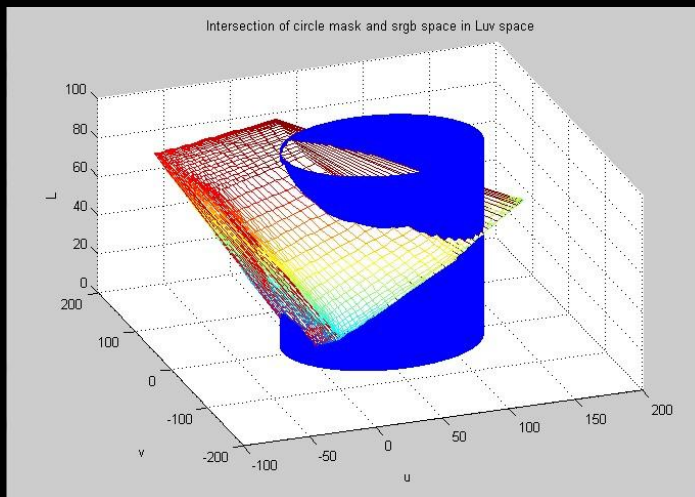
Gamut Creation

2D mask

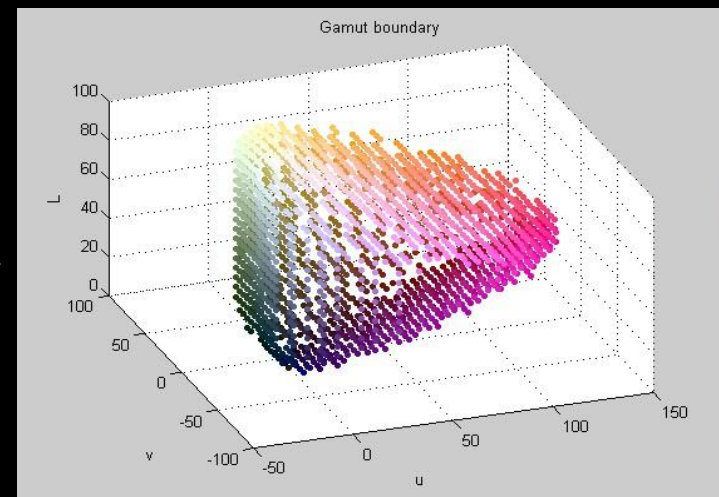3D gamut

Gamut Creation

Gamut mask (L*u*v*)

3D voxel grid
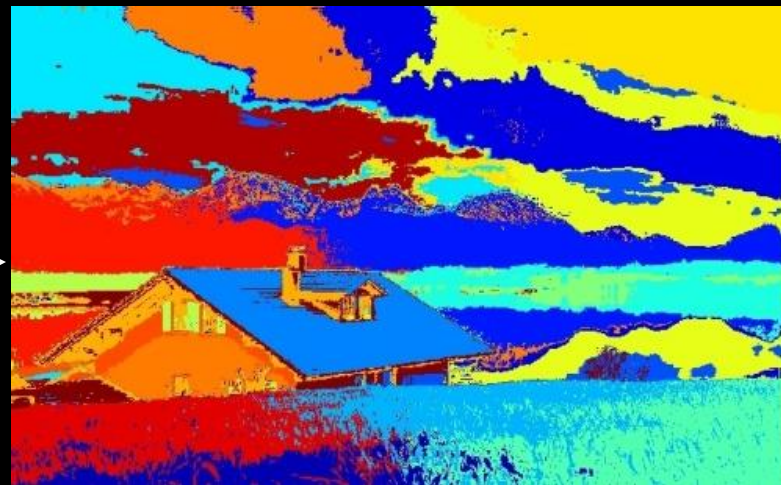

Intersect with sRGB

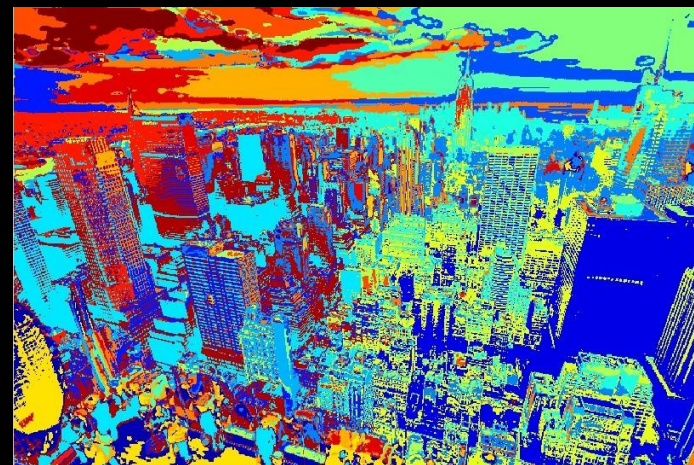

Gamut boundary

Image Processing

Input image

Clusters

Image Processing

- Cluster using K-Means in color and space.
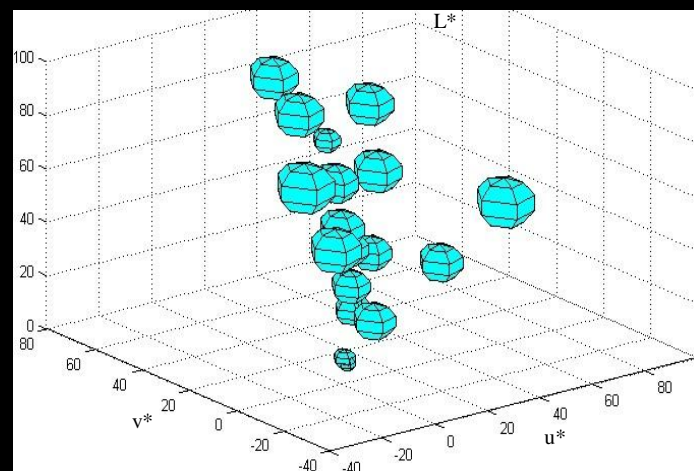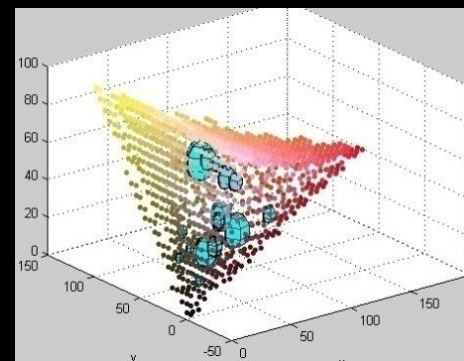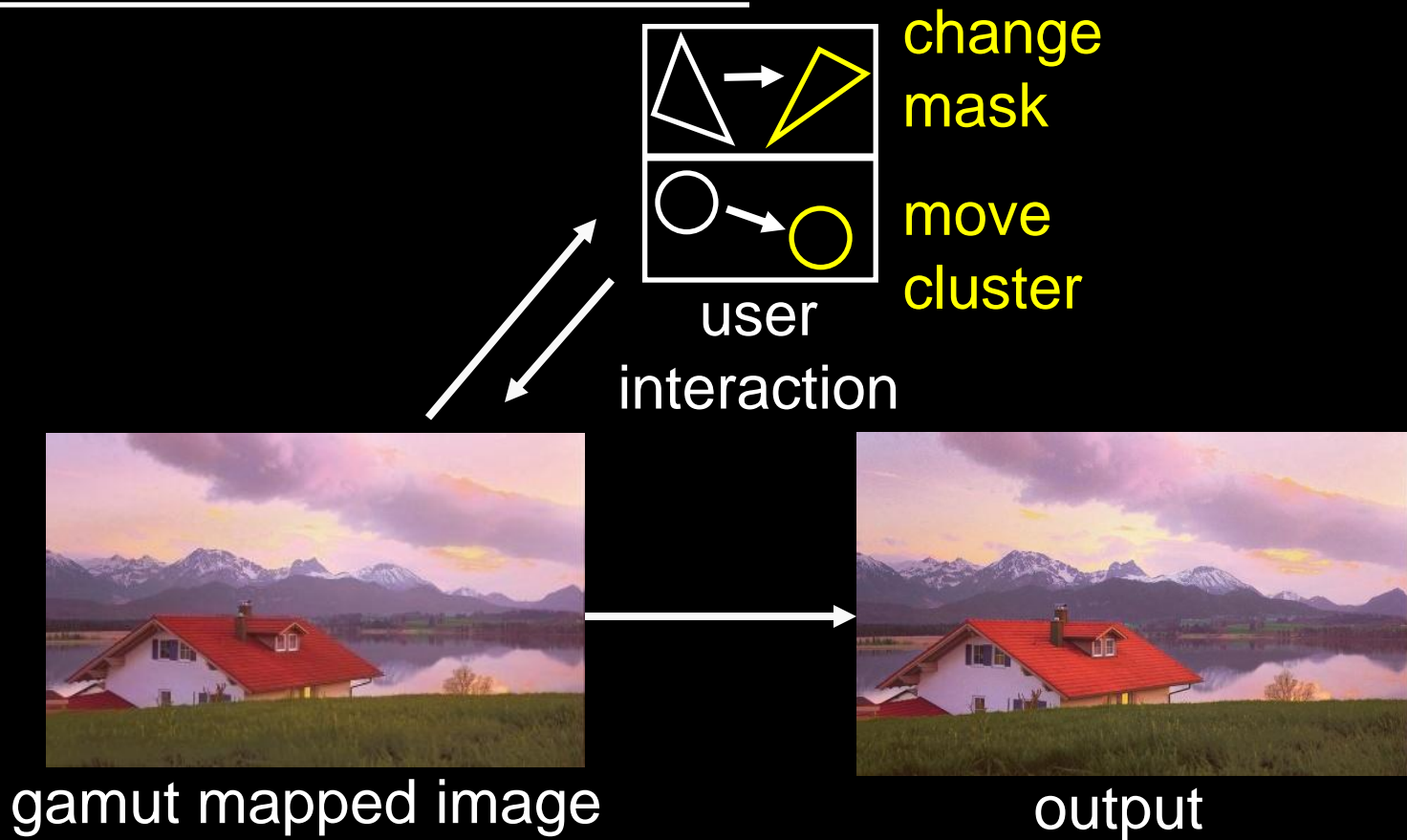- Similar to [Lau et al. 2011]

Clustered image

Original image

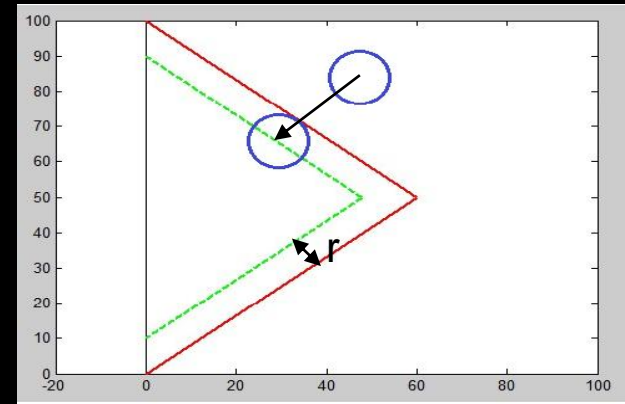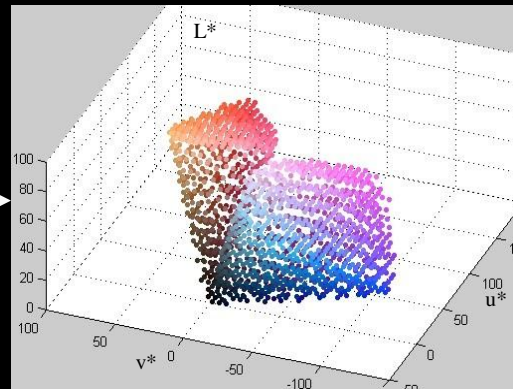
3D clusters

Gamut Mapping

change mask

move cluster

user interaction

gamut mapped image

output

Gamut Mapping

Gamut Boundary $\longrightarrow$ Distance Field $\longrightarrow$ Level-set r $\searrow$
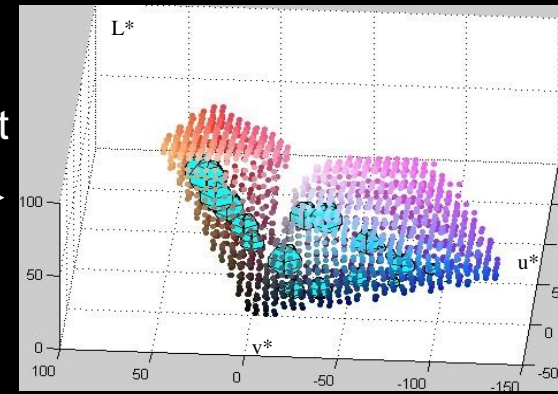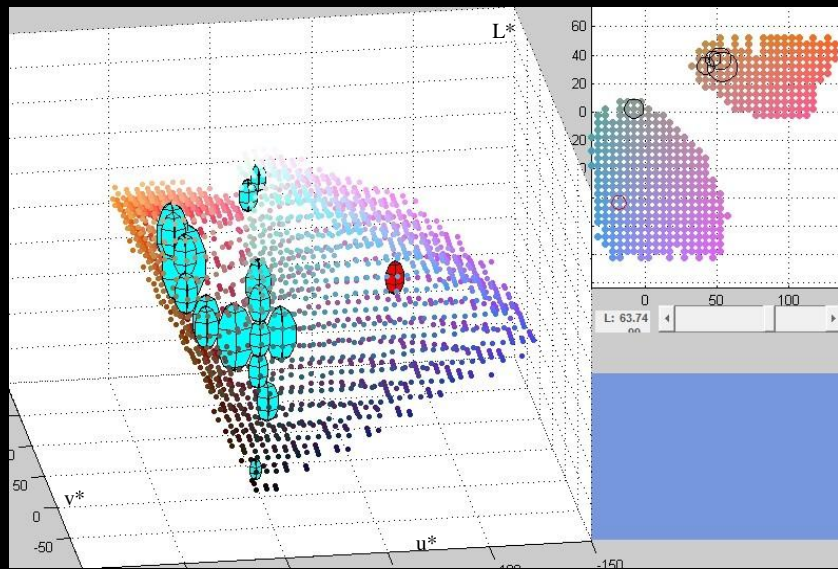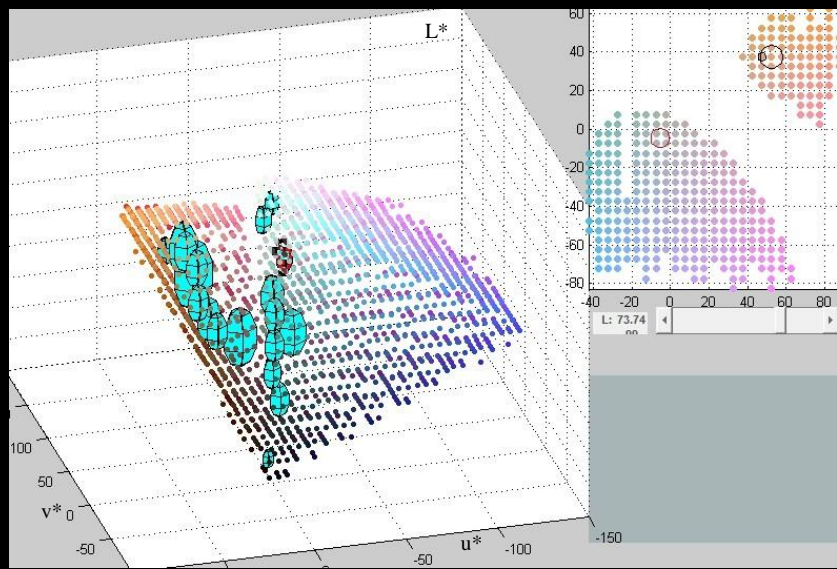
Output

Image $\longrightarrow$ Clusters $\nearrow$
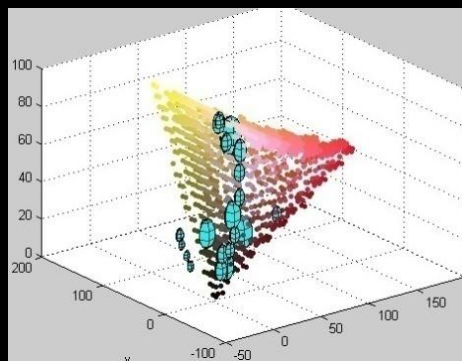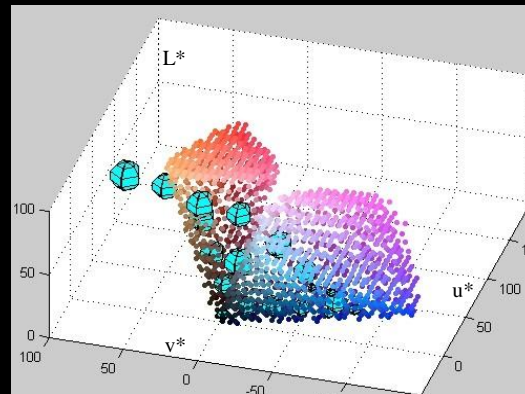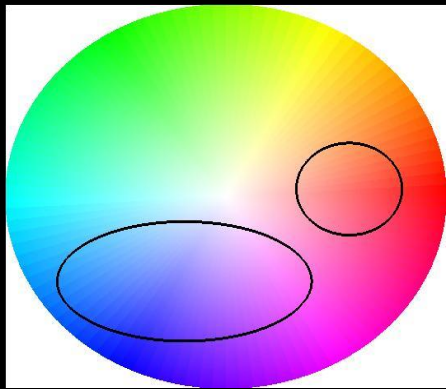
find the closest point in level-set $\longrightarrow$

User Interactions

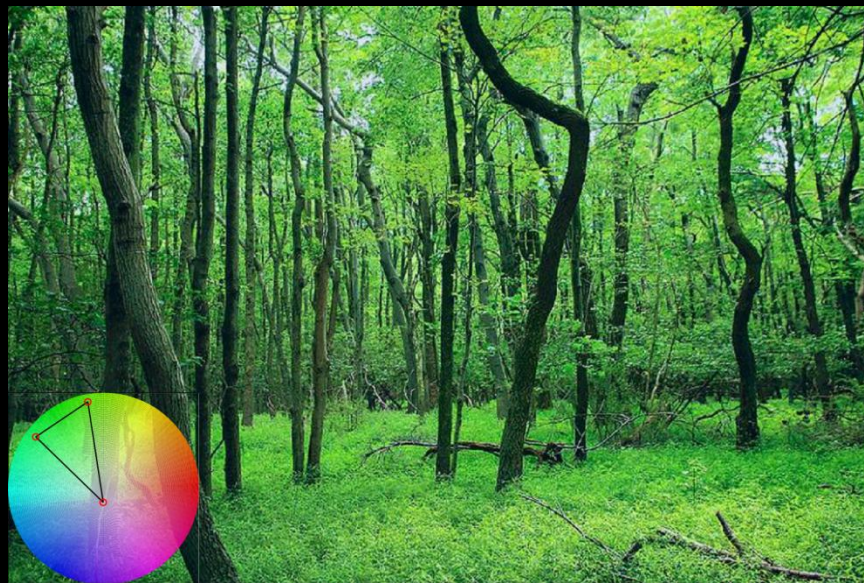# **Blending**

Image before blending

Image after blending

- Same as [Lau et al.]

Results

Original images courtesy of Pablo Romeo
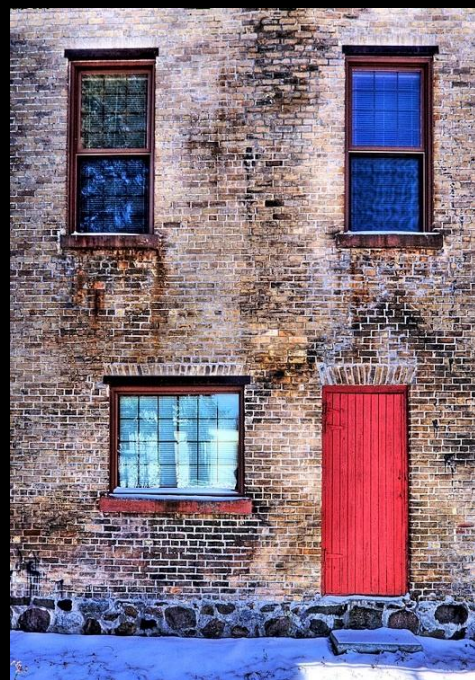
Results

Original images courtesy of Nicholas A. Tonelli
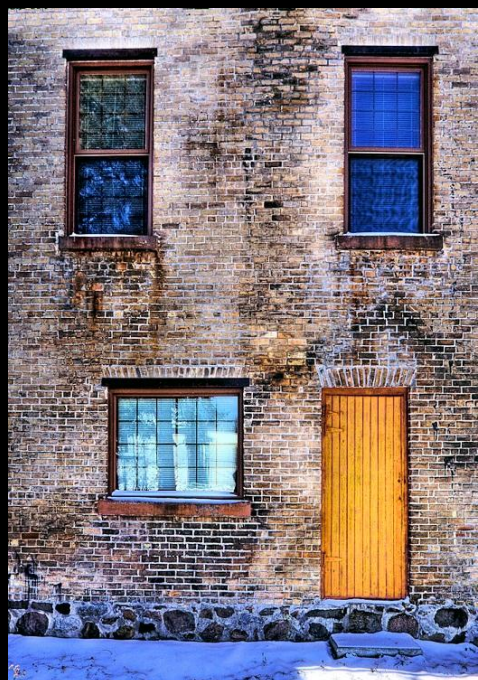
Results

Original images courtesy of Malik Ml Williams
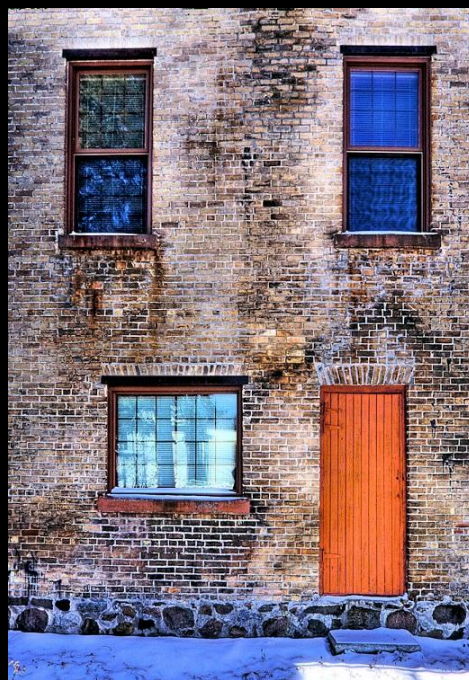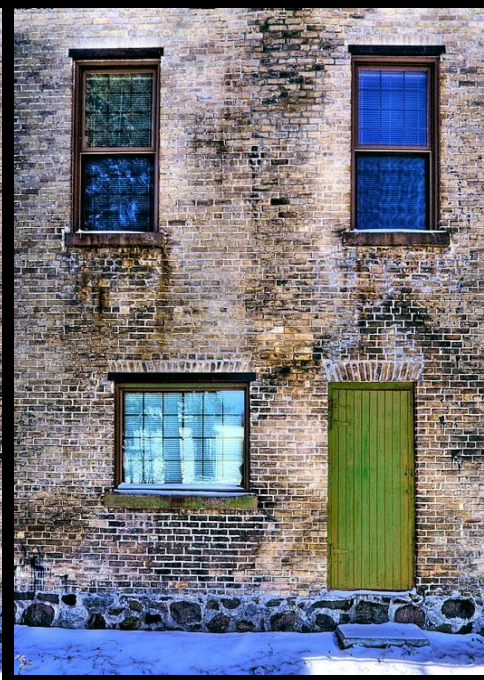
Results

Original Image   Yellow Door   Orange Door   Green Door
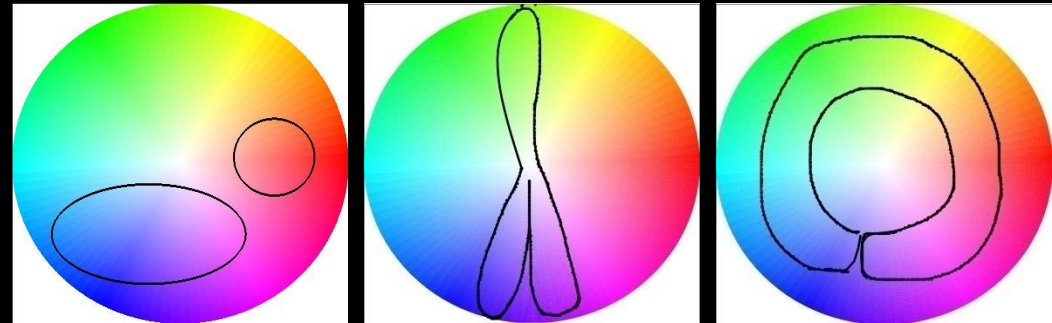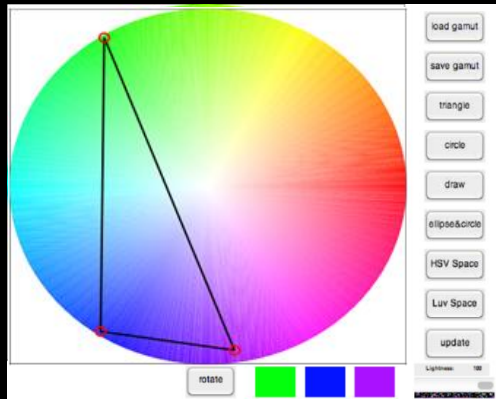
Results

Original Image

Greenish Tint Image

Bluish Tint Image

Original images courtesy of Flickr user colorblindPICASO

Conclusion

Interactive Gamut Masking Tool

Arbitrary gamut shapes

Support local color changes

Thank you

More information: http://ivrg.epfl.ch/research/gamut_masking