

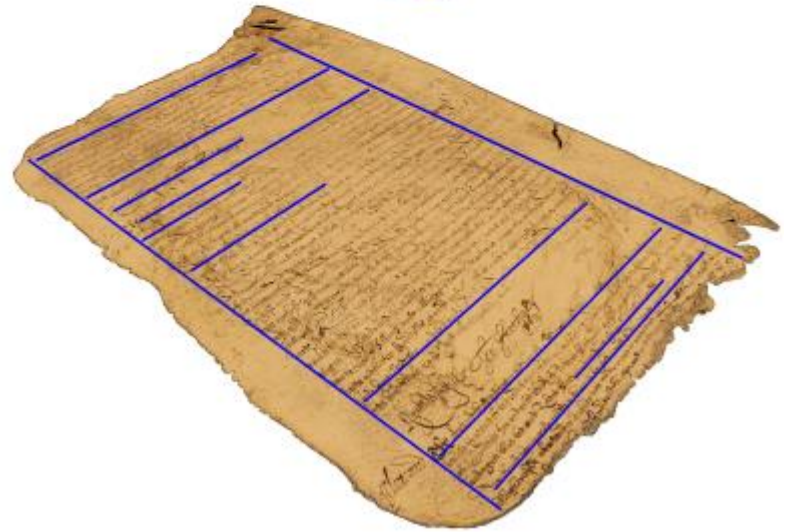
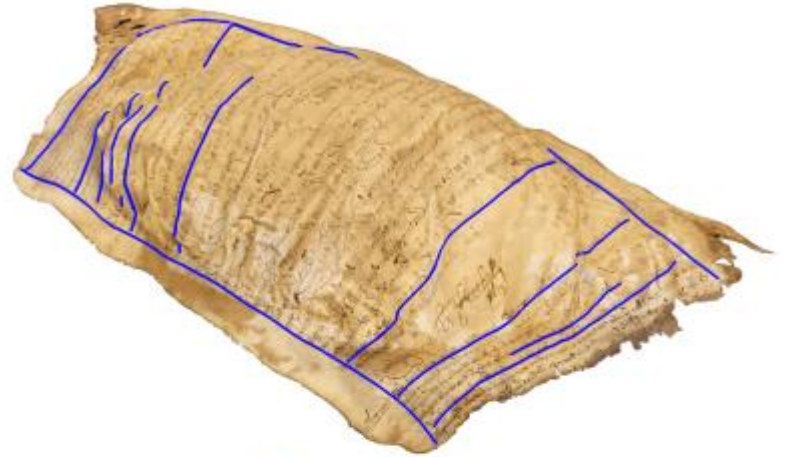
# Digital Geometry

-- applications

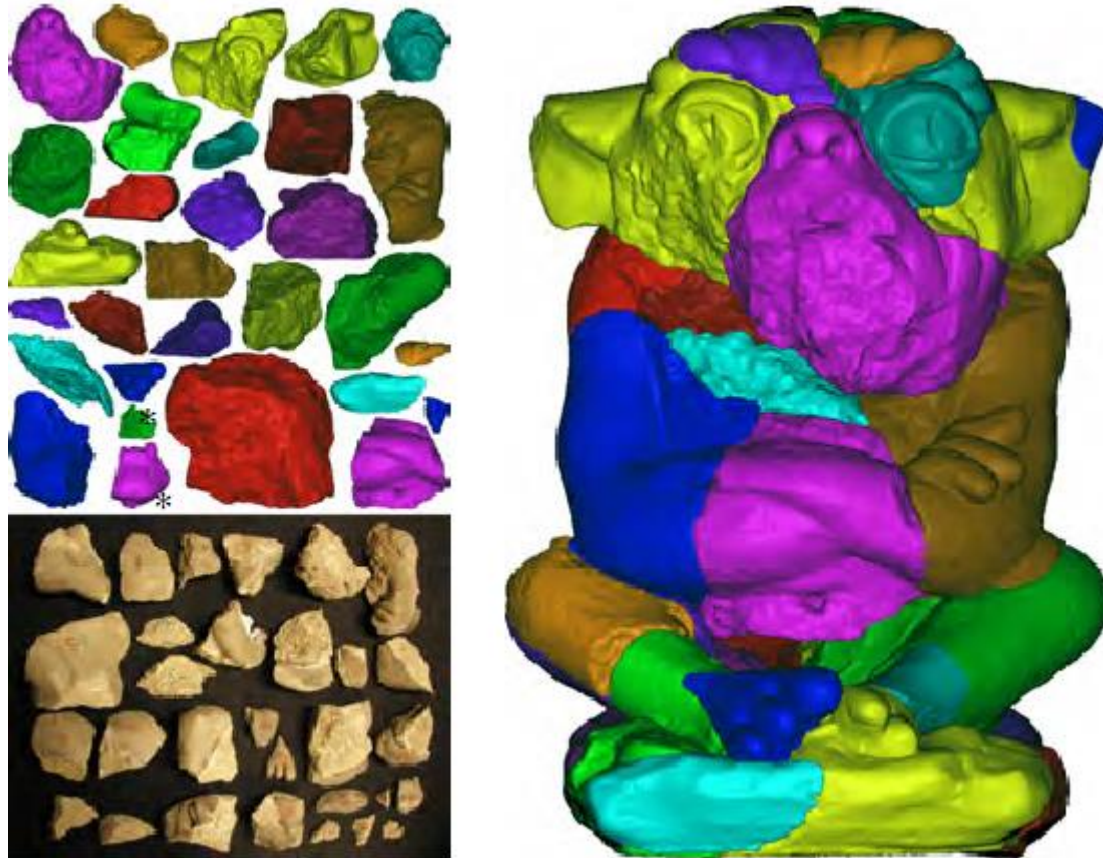
JJCAO

# Computational archaeology

# Eg14\_Content-Aware Surface Parameterization for Interactive Restoration of Historical Documents

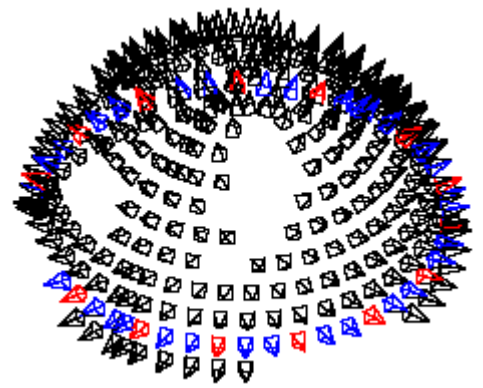


# Tog06\_Reassembling Fractured Objects by Geometric Matching



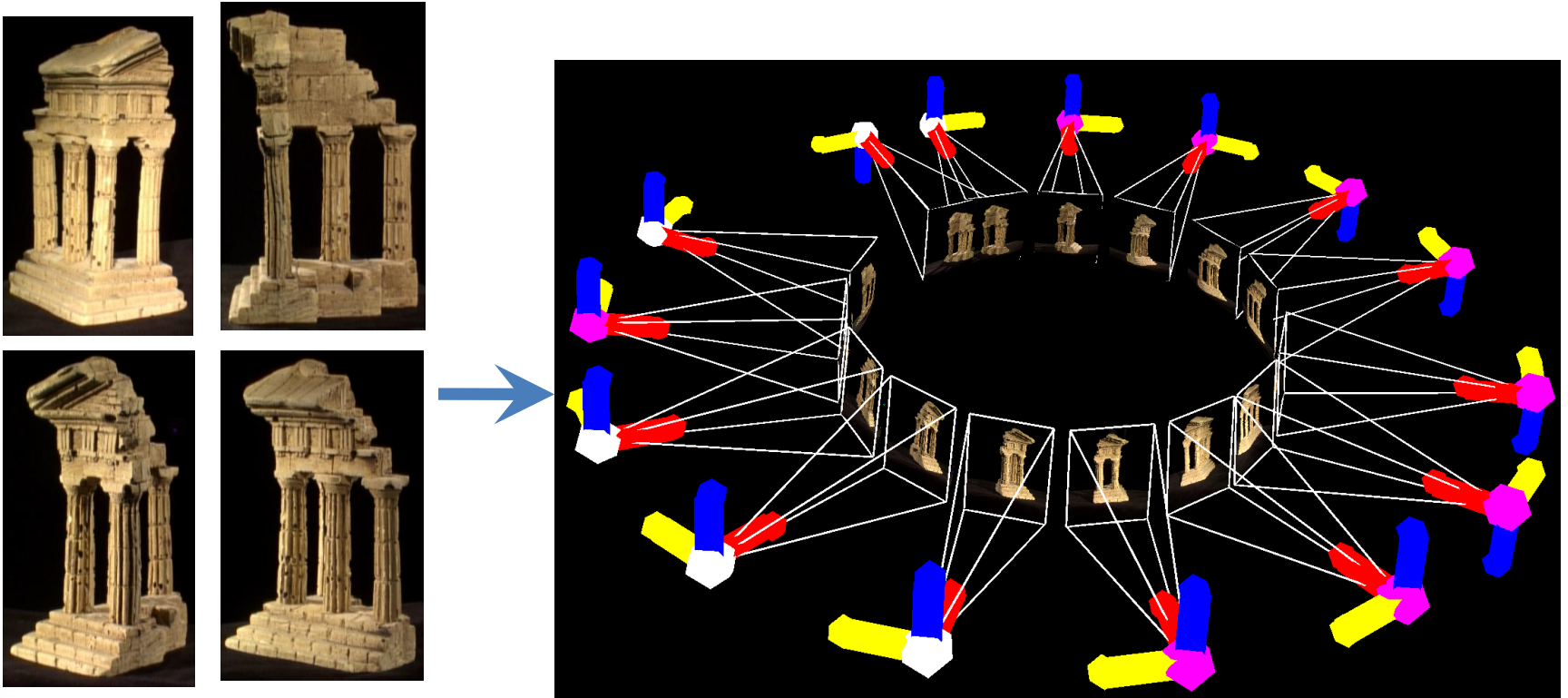
Reassembling a gargoyle statue: photo (bottom left) and 3D models (top left) of the fragments, final assembly (right).

# Multi-View Stereo





# Image Calibration



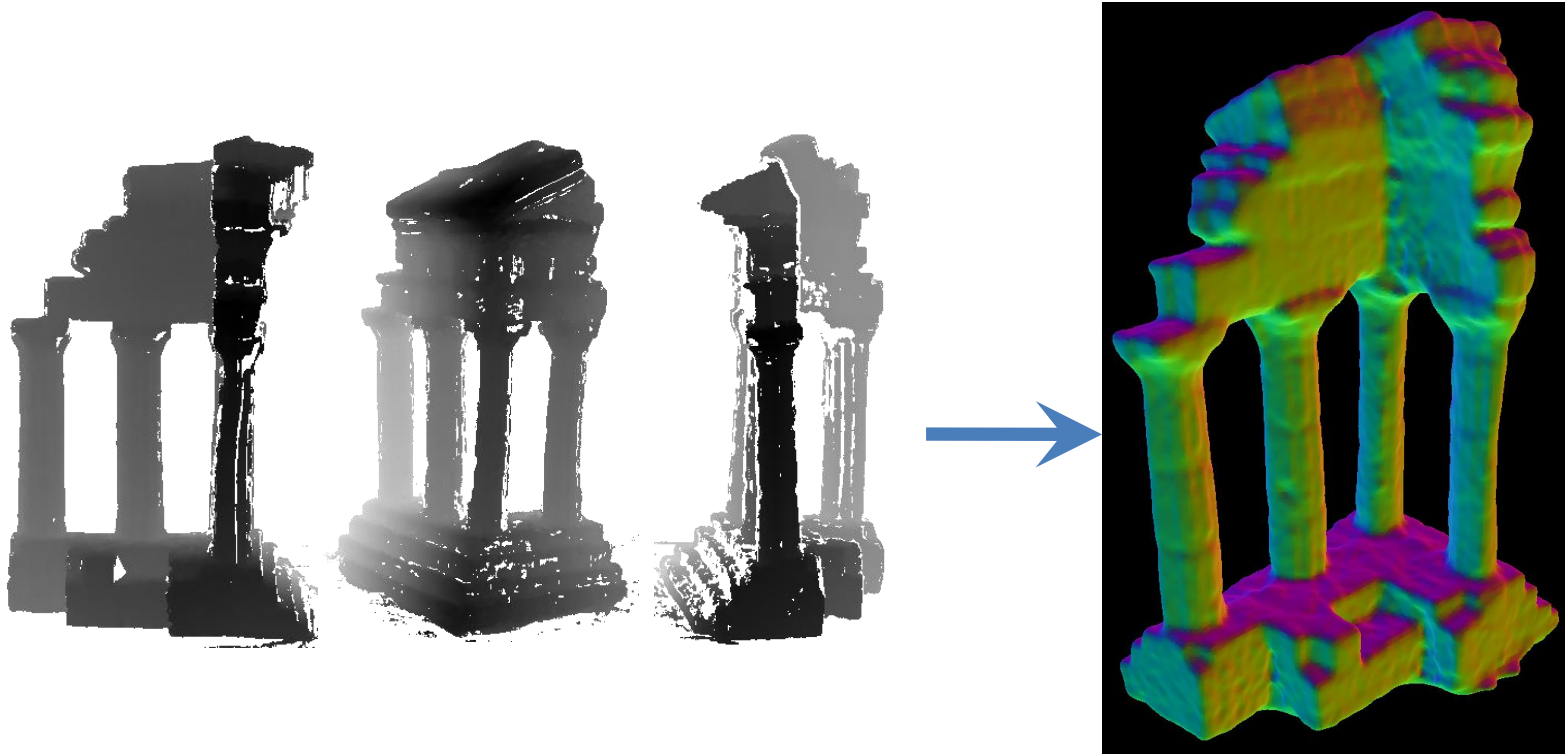
- Input: set of pictures
- Output: camera position, orientation, intrinsic parameters (focal length, optical center)

# Depth Map Construction



- Input: set of calibrated images
- Output: distance to object for each pixel in the image

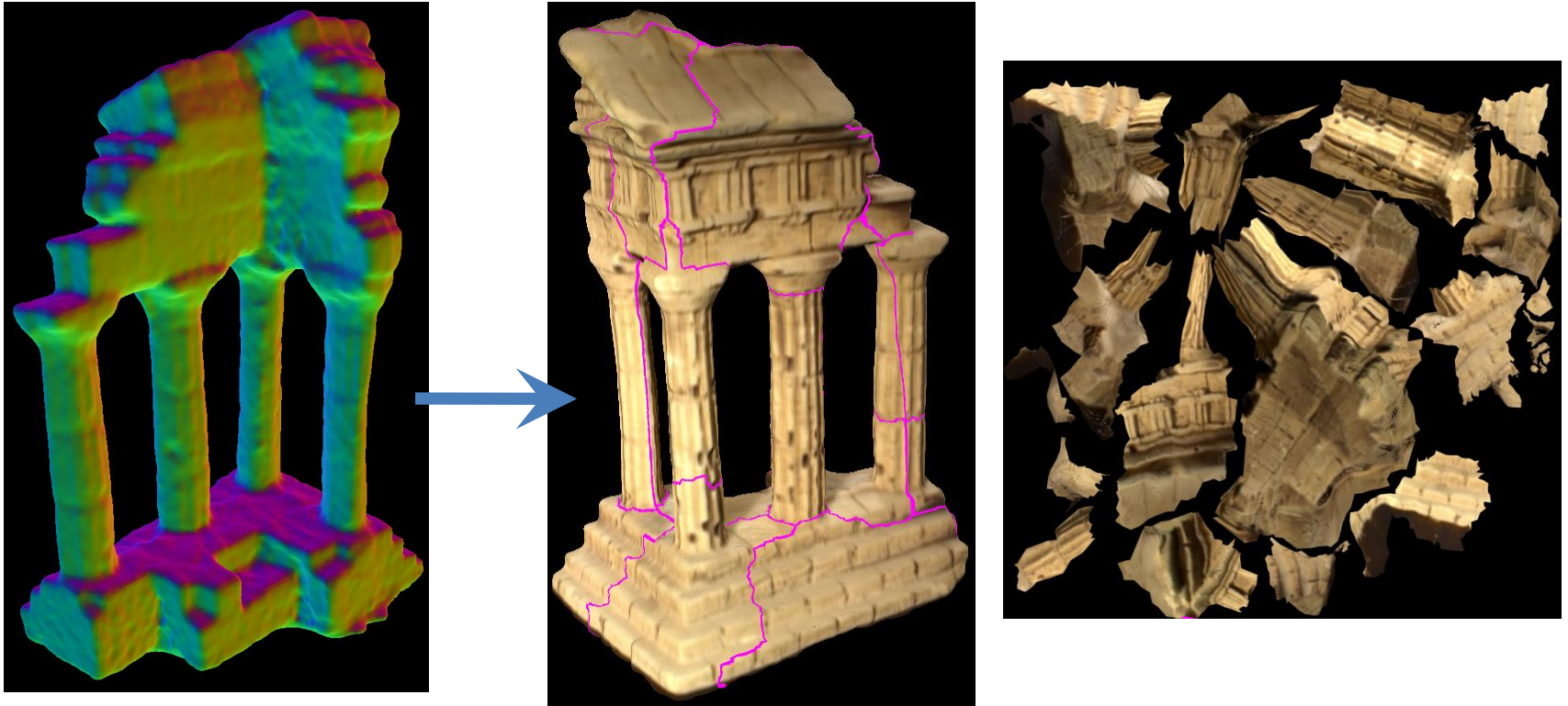
# Mesh Reconstruction



- Input: set of calibrated images & depth maps
- Output: mesh of object



# Texture Generation



- Input: set of calibrated images and mesh of object
- Output: atlas and texture

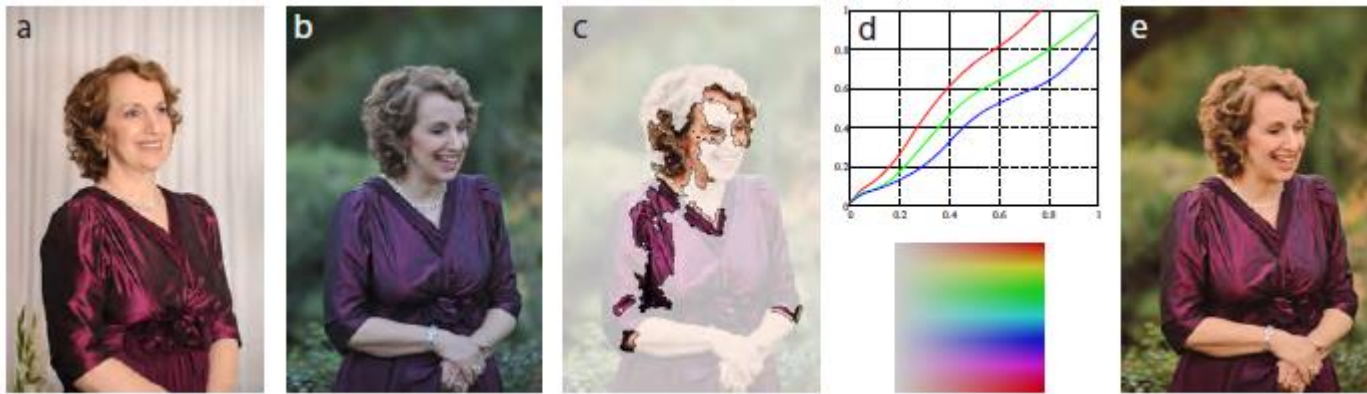
# Computational aesthetics

# Sig06\_Color Harmonization

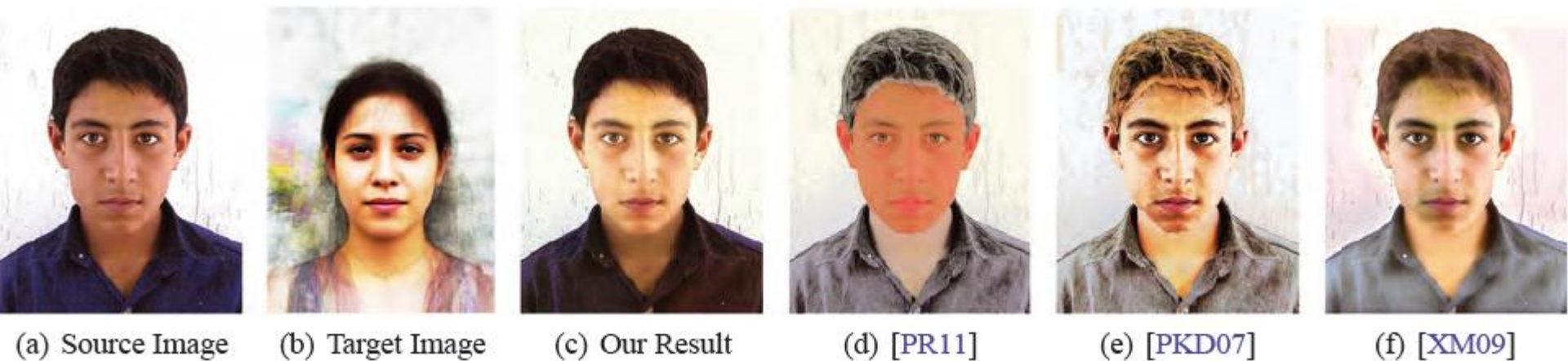


- Harmonic colors are sets of colors that are aesthetically pleasing in terms of human visual perception.
- In this paper, we present a method that enhances the harmony among the colors of a given photograph or of a general image, while remaining faithful, as much as possible, to the original colors.

# Color transfer



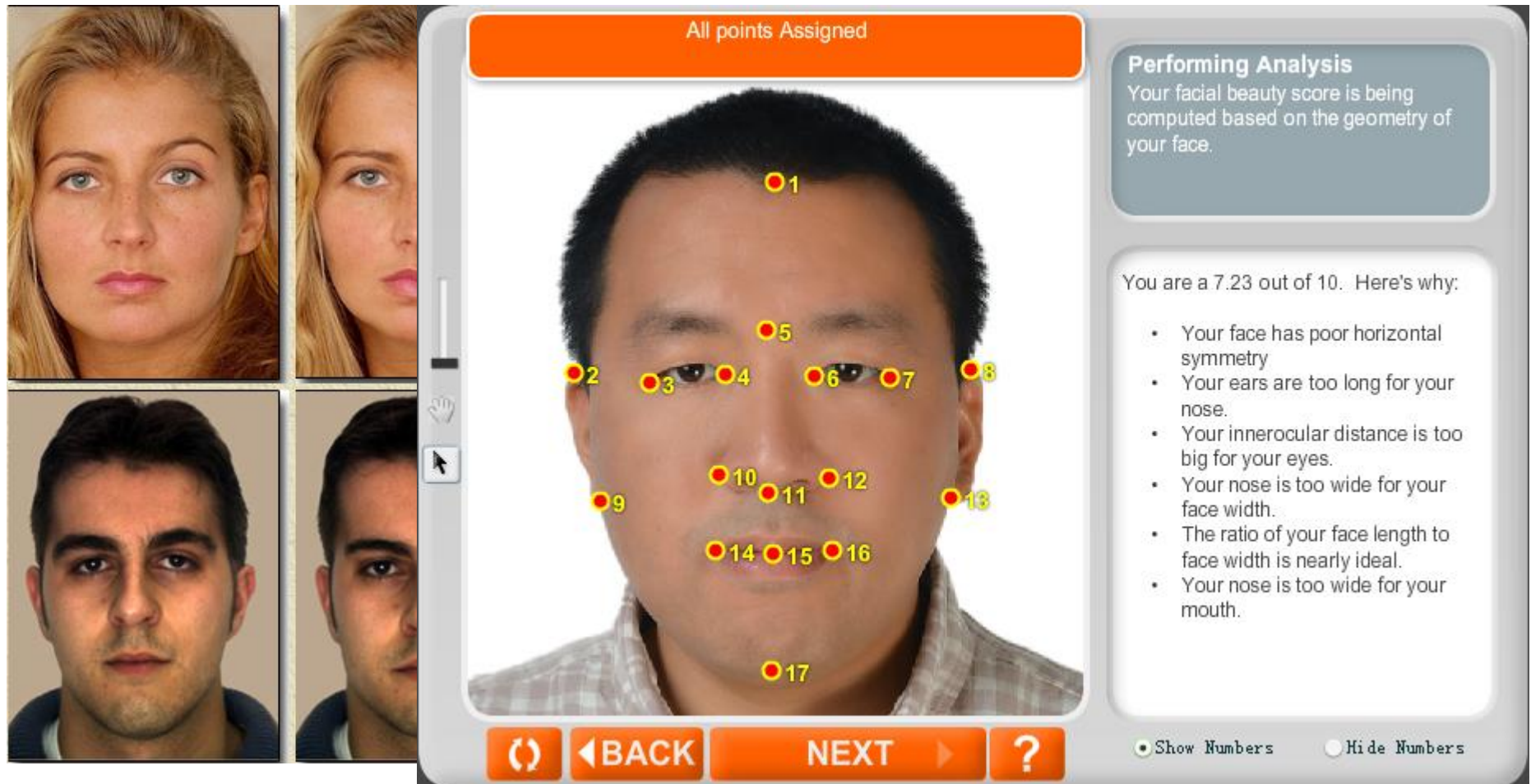
Sig11\_Non-Rigid Dense Correspondence with Applications for Image Enhancement



cgf13\_Content-Based Colour Transfer



# Sig08\_Data-Driven Enhancement of Facial Attractiveness



The screenshot displays a software interface for facial beauty analysis. On the left, there are four small portrait images of two individuals: a woman with blonde hair and a man with dark hair. The central part of the interface features a larger image of the man's face, overlaid with 17 yellow circular markers numbered 1 through 17, indicating specific facial landmarks. Above this image is an orange banner that reads "All points Assigned". To the right of the face image, a grey box titled "Performing Analysis" contains the text: "Your facial beauty score is being computed based on the geometry of your face." Below this, another grey box states: "You are a 7.23 out of 10. Here's why:" followed by a bulleted list of analysis points. At the bottom of the interface, there are navigation buttons: a circular arrow icon, a "BACK" button, a "NEXT" button, and a question mark icon. On the far right, there are two radio buttons labeled "Show Numbers" (which is selected) and "Hide Numbers".

All points Assigned

**Performing Analysis**  
Your facial beauty score is being computed based on the geometry of your face.

You are a 7.23 out of 10. Here's why:

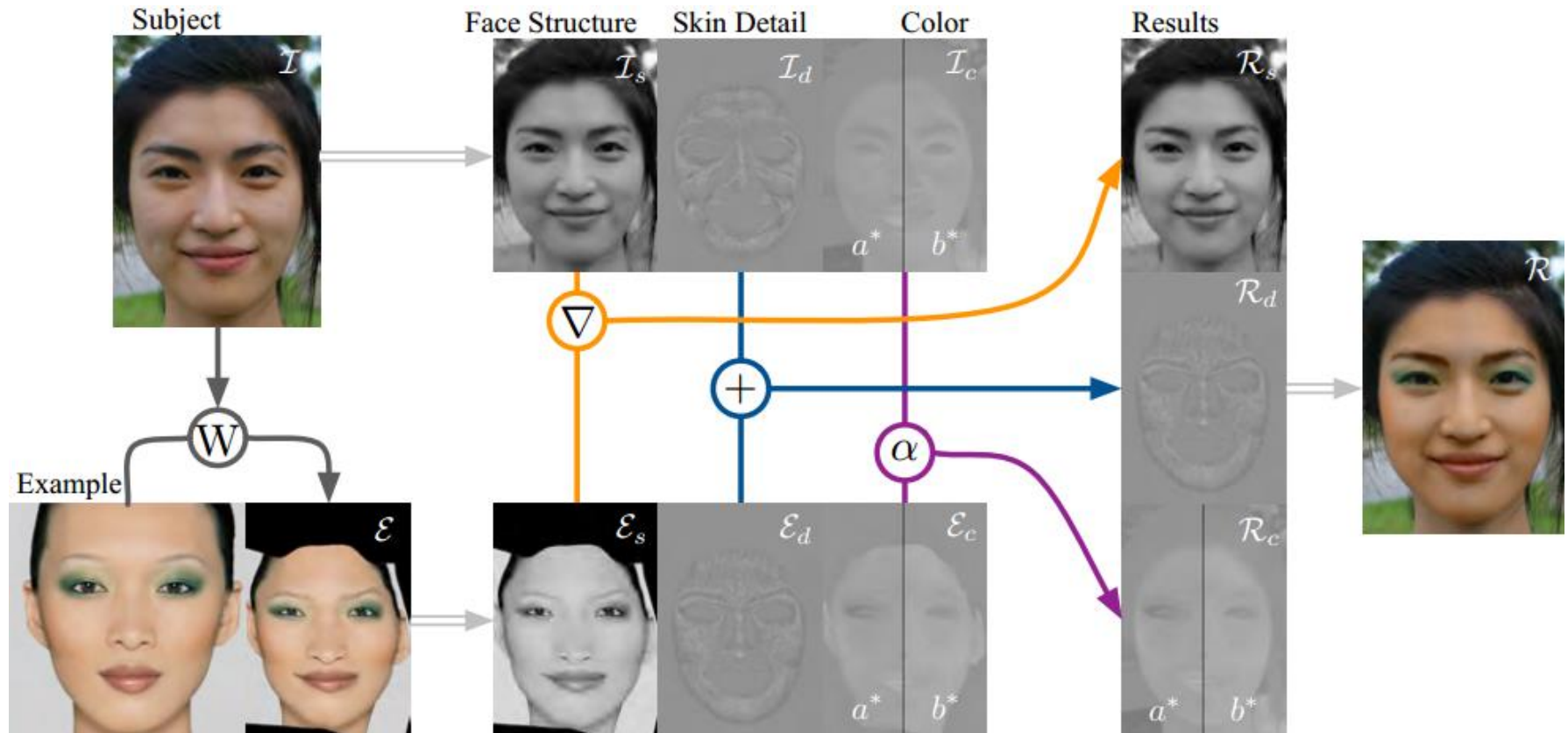
- Your face has poor horizontal symmetry
- Your ears are too long for your nose.
- Your innerocular distance is too big for your eyes.
- Your nose is too wide for your face width.
- The ratio of your face length to face width is nearly ideal.
- Your nose is too wide for your mouth.

⌂ BACK NEXT ?

☒ Show Numbers ☐ Hide Numbers

- [Facial Beauty Analysis - Score Your Face](#)

# cvpr09\_Digital Face Makeup by Example



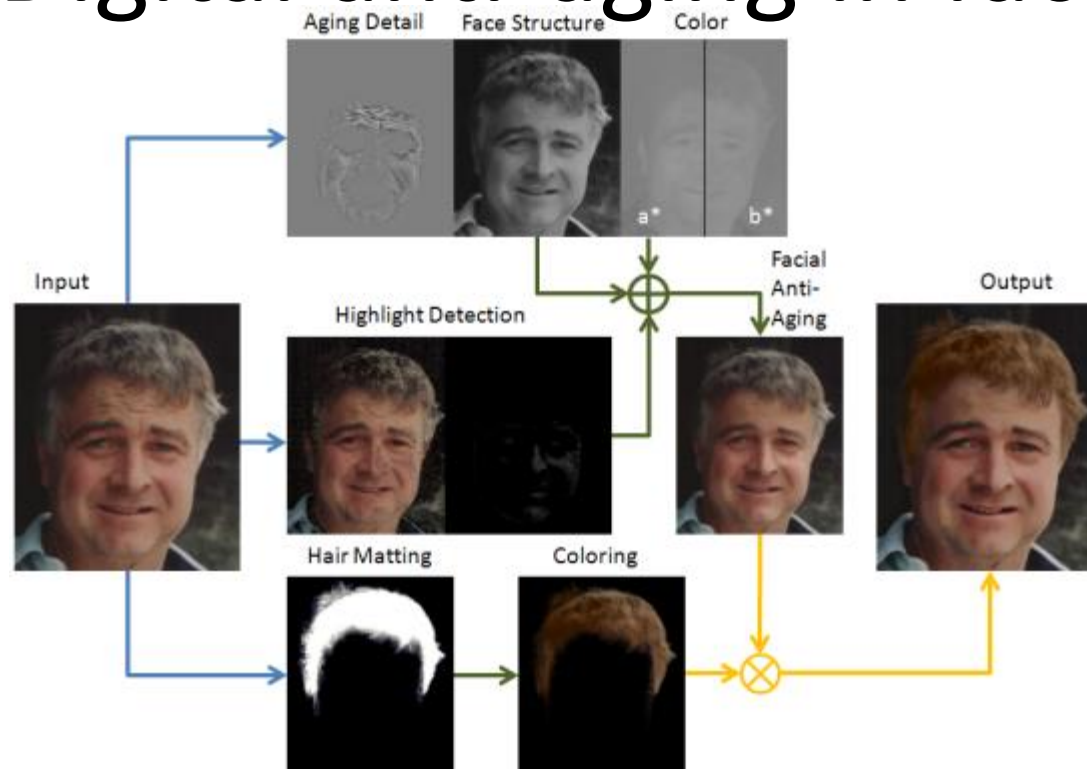


# Isvc09\_Adaptive Digital Makeup

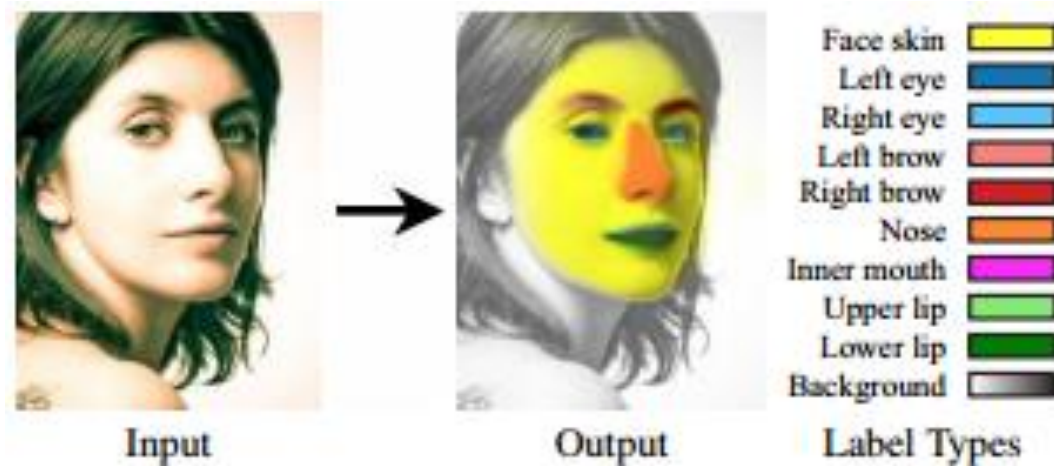


Output of the fuzzy based skin segmentation

# lccv11\_Digital anti-aging in face images



# Cvpr13\_Exemplar-Based Face Parsing



Tog11\_

## A Framework for content-adaptive photo manipulation macros: Application to face, landscape, and global manipulations



a framework for generating content-adaptive macros that can transfer complex photo manipulations to new target images

# Siga10\_A Practical Appearance Model for Dynamic Facial Color



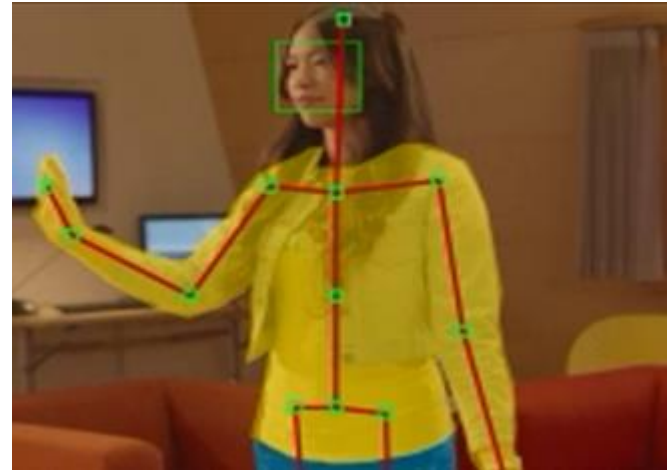
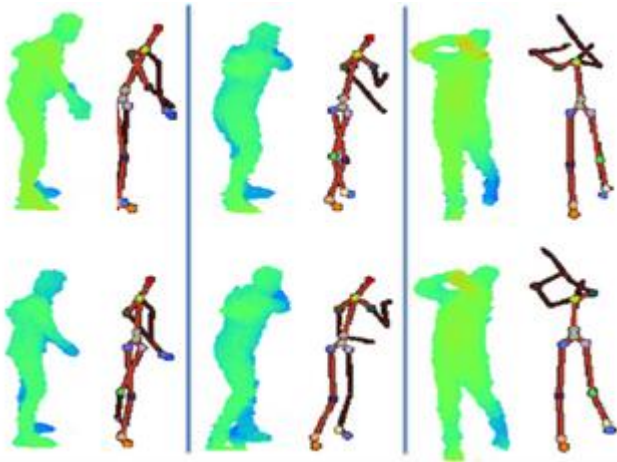
# More references

- Facial Makeup Detection Using HSV Color Space and Texture Analysis, thesis 2012.
- Icip13\_AN AUTOMATIC FRAMEWORK FOR EXAMPLE-BASED VIRTUAL MAKEUP
- Tip13\_Face Illumination Manipulation Using a Single Reference Image by Adaptive Layer Decomposition
- Casa13\_Physically based cosmetic rendering
- Smc13\_Facial Skin Beautification Using Region-Aware Mask
- Tis13\_A New Face Relighting Method Based on Edge-Preserving Filter
- Eg11\_Computer-Suggested Facial Makeup
- Tvcg12\_Enhancing the Symmetry and Proportion of 3D Face Geometry
- TOMCCAP13\_Towards decrypting attractiveness via multi-modality cues
- IJCSE13\_Human Age Prediction and Classification Using Facial Image
- Makeup Transfer Using Multi-Example
- Eye color classification for makeup improvement

# Other



# Cvpr12\_Exemplar-Based Human Action Pose Correction and Tagging

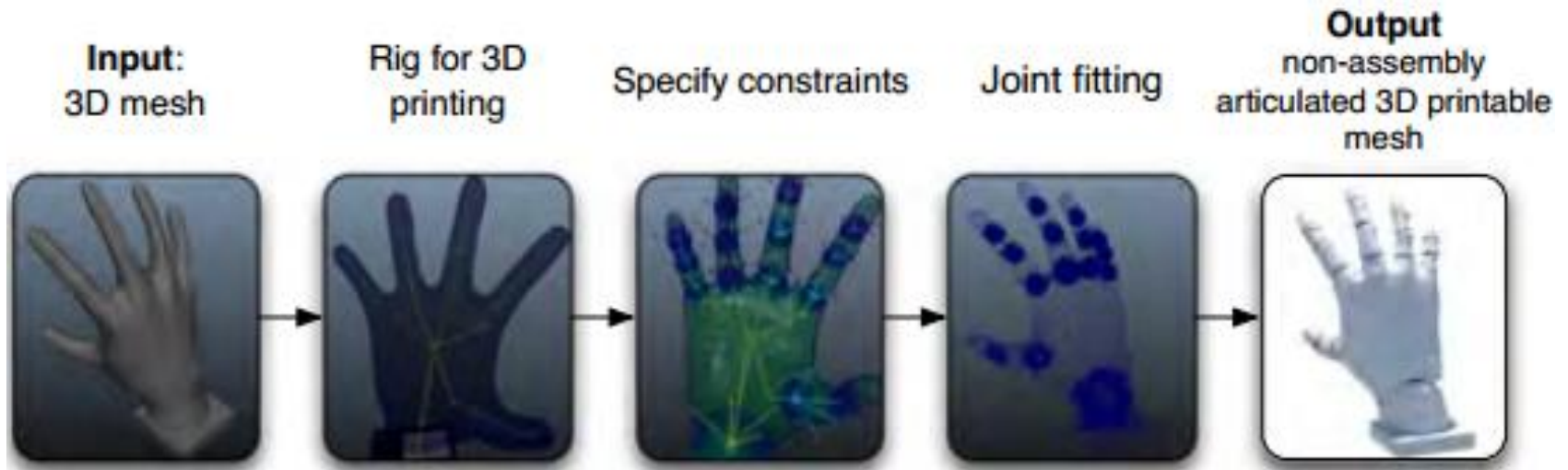


**ic11\_Kinect Identity: Technology and Experience**

# Image Compositing



# Siga12\_3D-Printing of Non-Assembly, Articulated Models

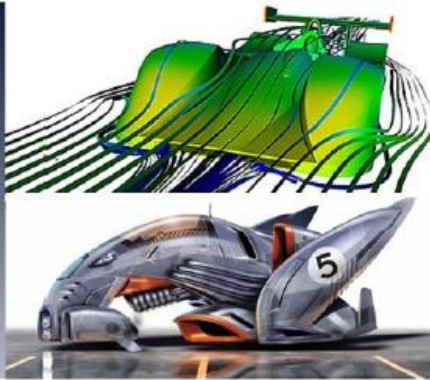




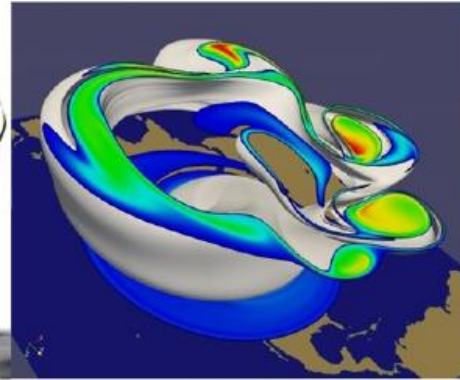
# Applications



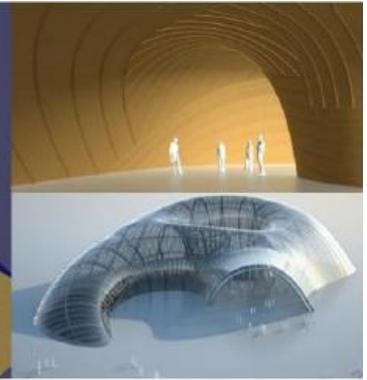
(a) 数字医疗



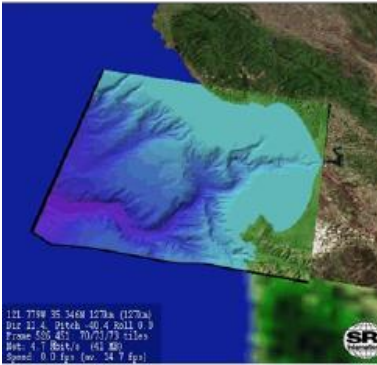
(b) 汽车设计



(c) 大气模拟



(d) 建筑设计



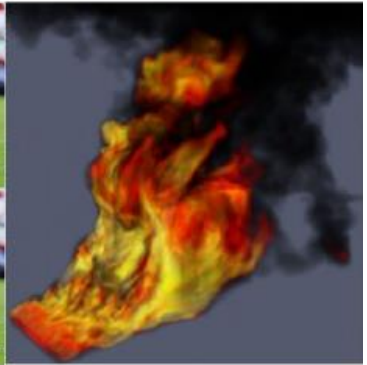
(e) 地形分析



(f) 虚拟现实



(g) 影视娱乐



(h) 虚拟科学实验

# Online applications

- [Webcam Social Shopper](#): the virtual dressing room