Crowd-Powered Parameter Analysis for Computational Design Exploration


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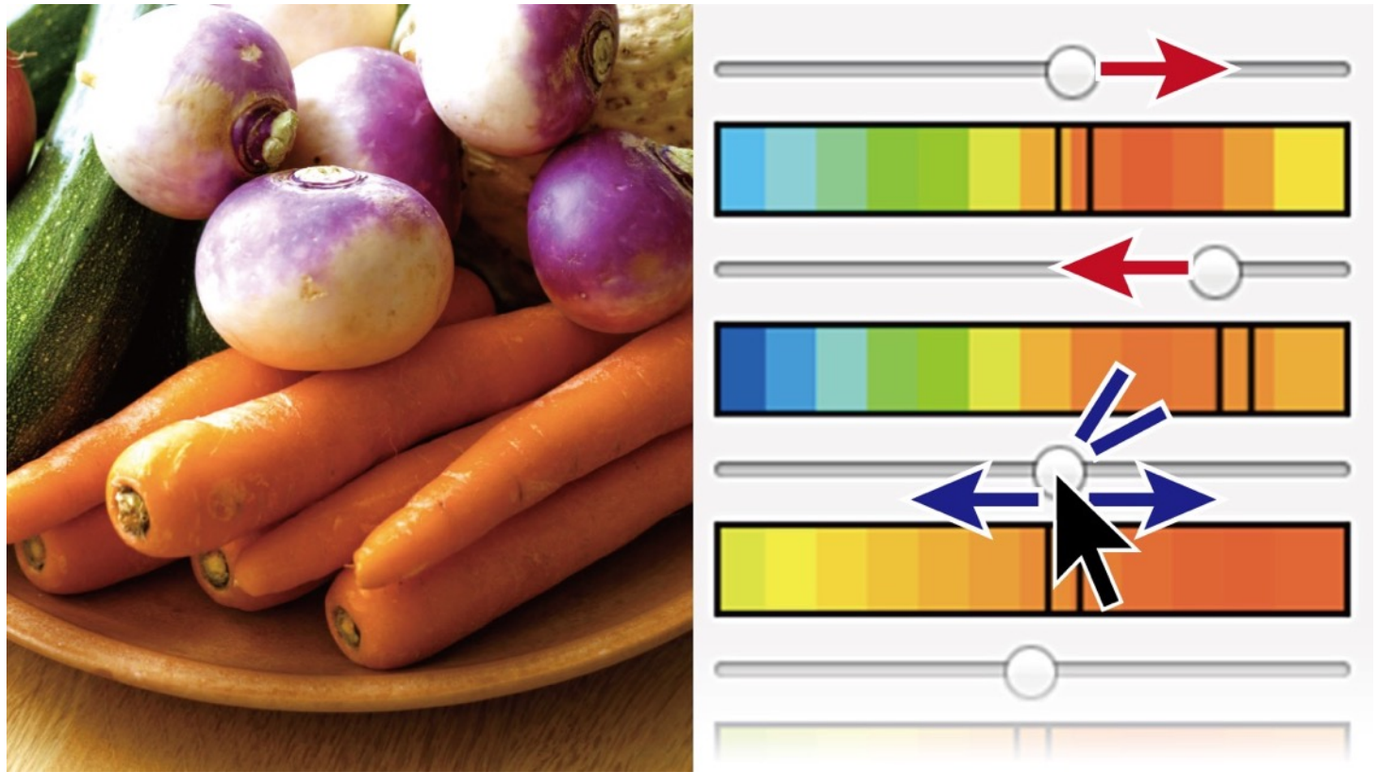


Design parameter tweaking with our method

Application to various design domains

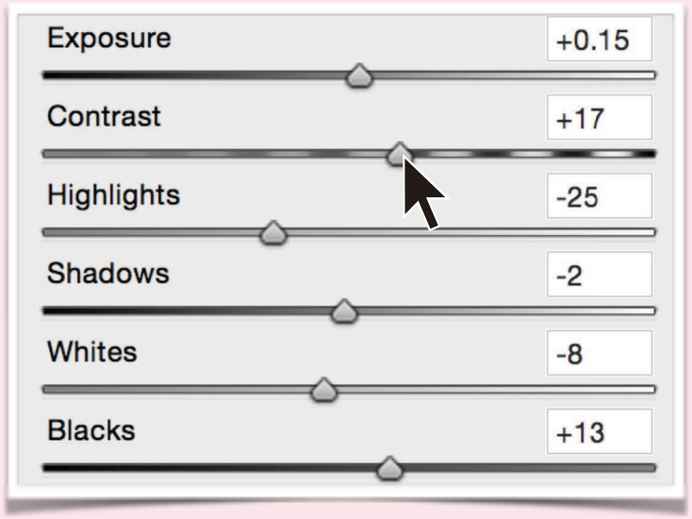
Summary

Goal

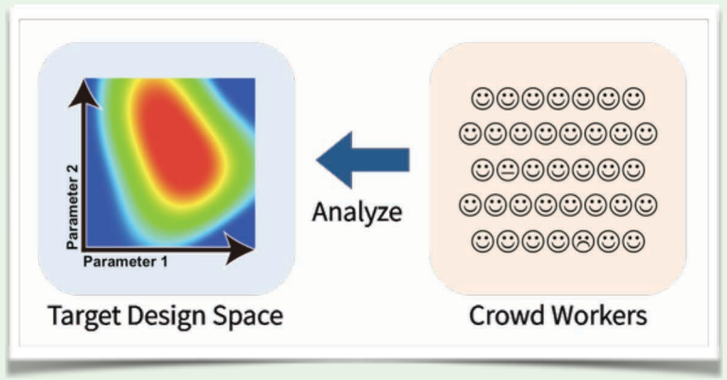
- Support of **parameter tweaking** for design exploration

Our Approach / Contributions

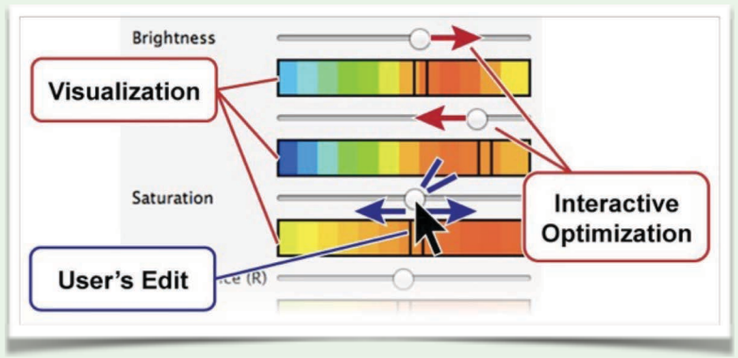
- **Analysis** of design space by **crowdsourcing** / **human computation**
- **User interfaces** for design exploration based on the analysis



Parameter Tweaking



Crowd-Powered Analysis



New User Interface

Overview | Crowd-Powered Analysis

Design Task

design parameters

Brightness

Contrast

Saturation

Color Balance (R)

Color Balance (G)

Color Balance (B)

Analysis

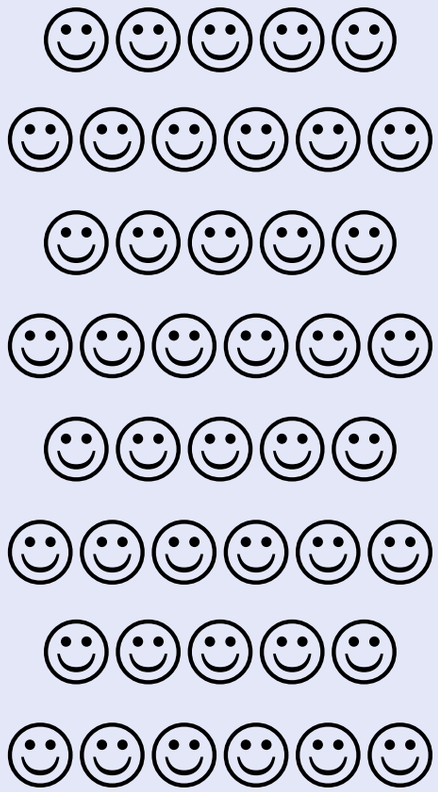
not good *good*

parameter space

parameter 2

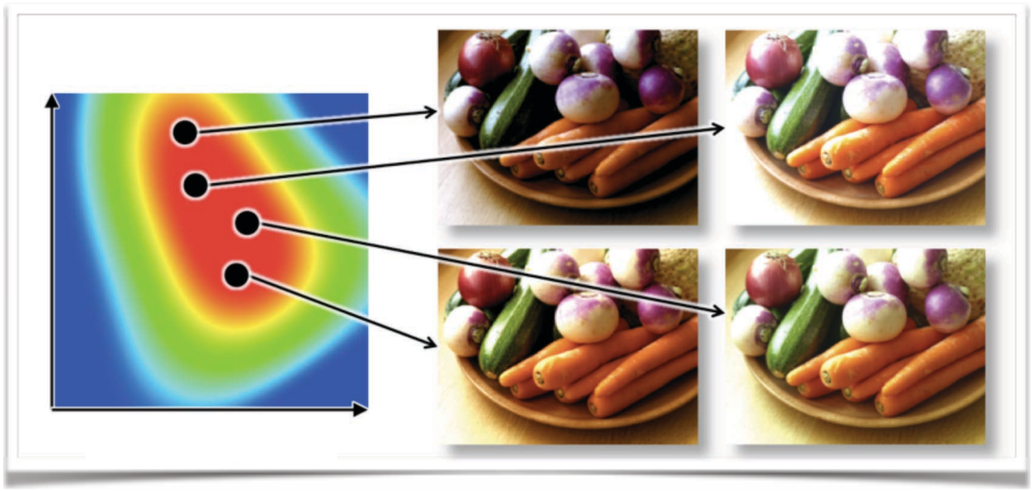
parameter 1

Crowds

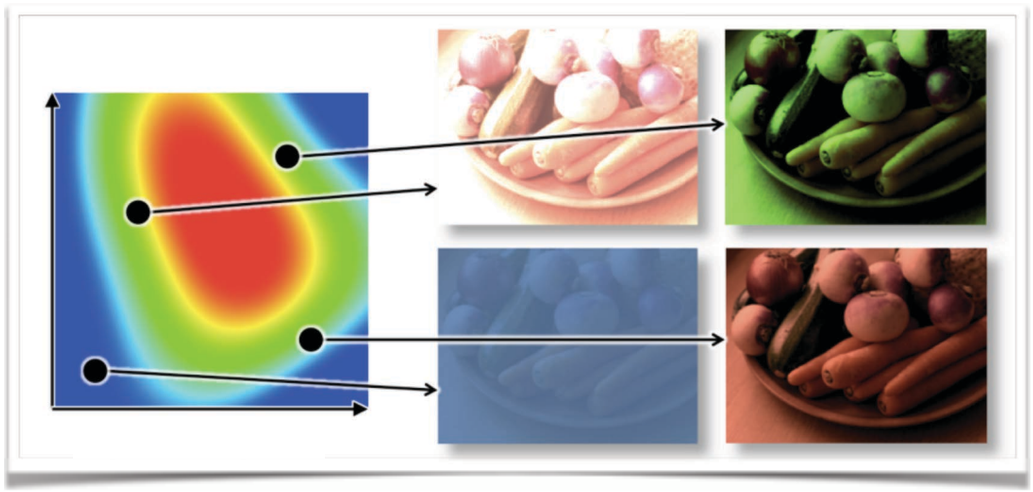


Overview of our method. Our goal is to facilitate design exploration, which often requires to tweak many design parameters. Our method analyzes the design parameter space and obtains a scalar function that can evaluate the goodness of each design. To do this, we use crowdsourced human computation.

User Interface

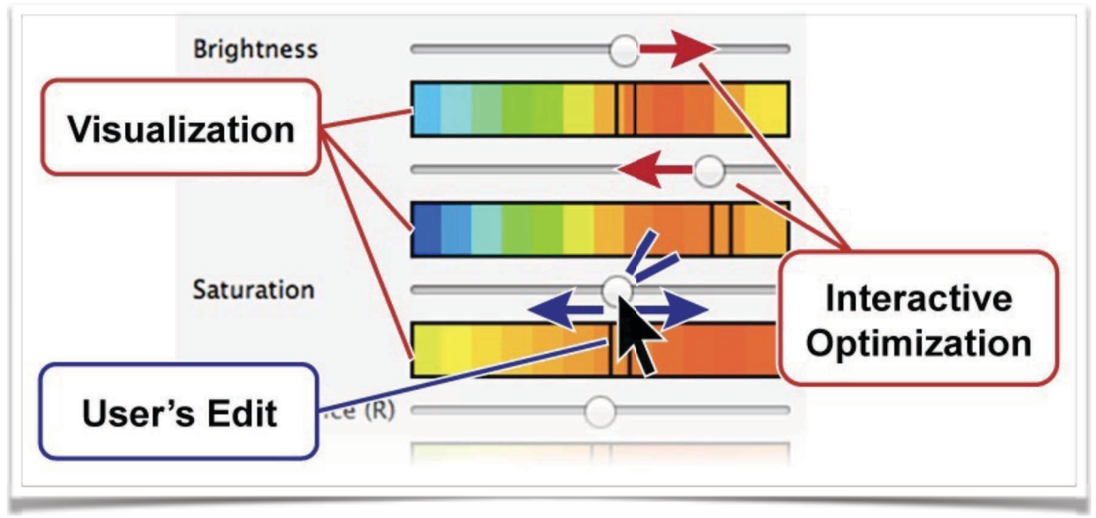


Smart Suggestion provides candidate designs generated based on the analysis

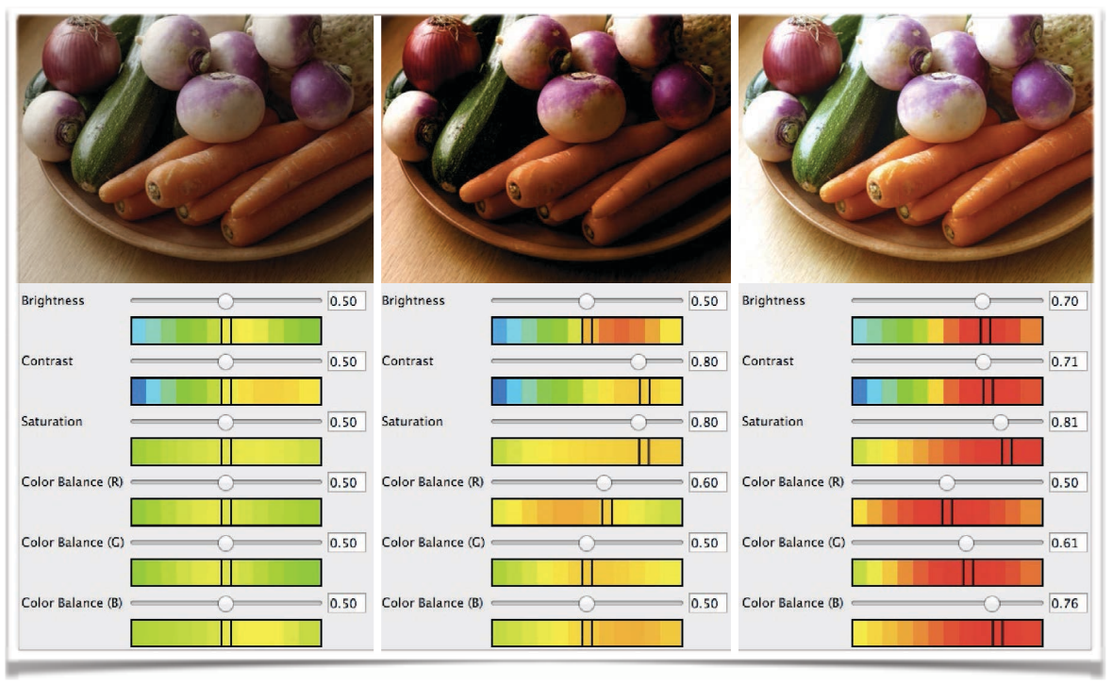


Naive (random) suggestions

Smart Suggestion

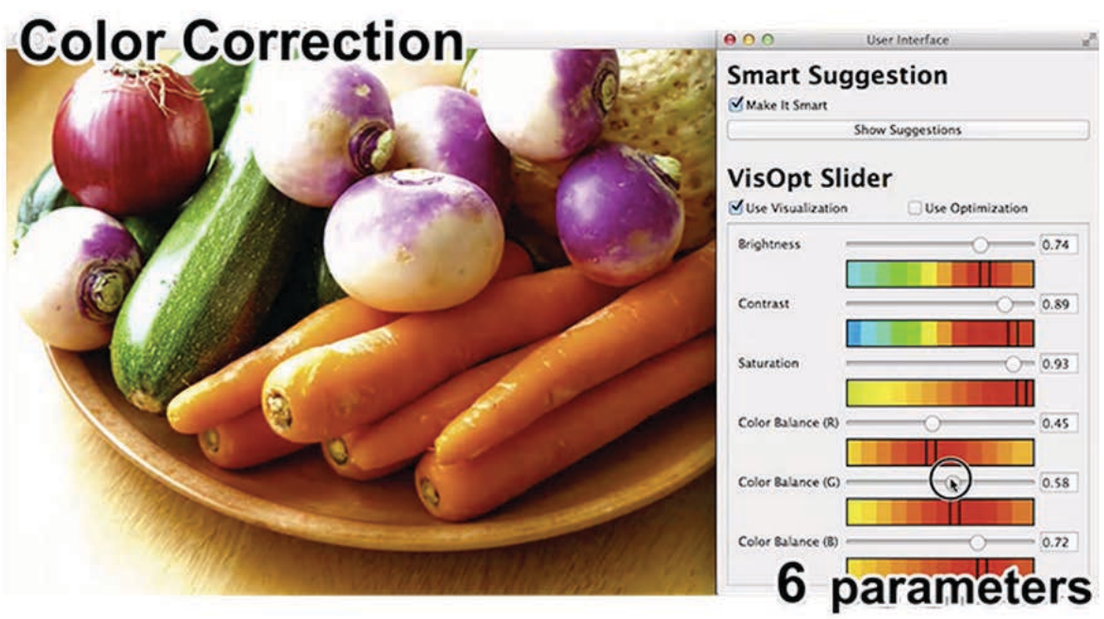


Sliders with **Vis**ualization and **Opt**imization

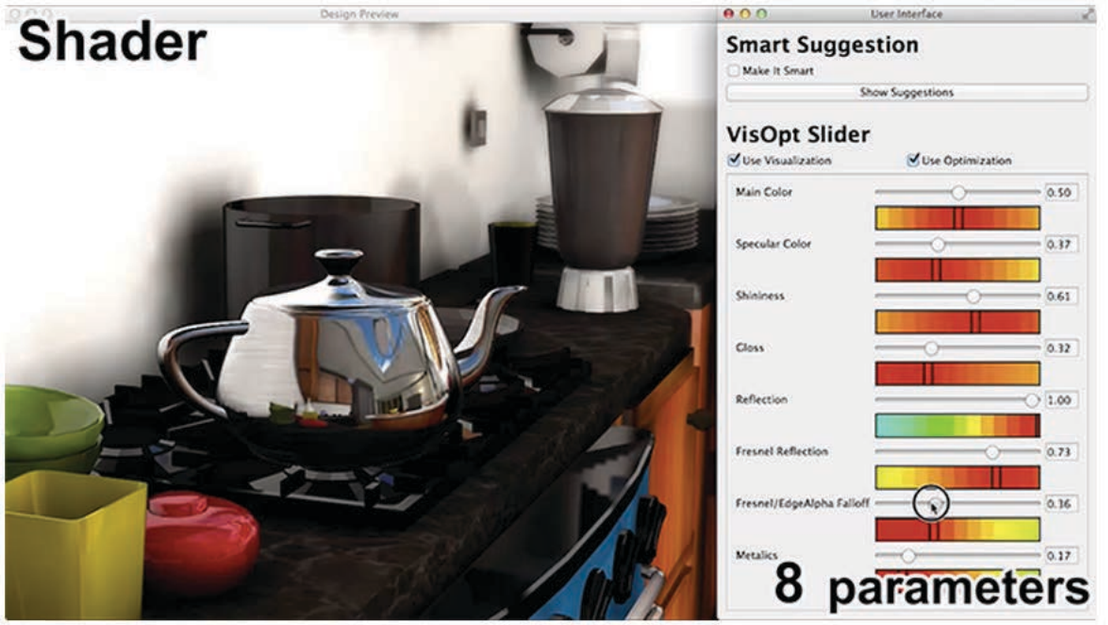


VisOpt Slider

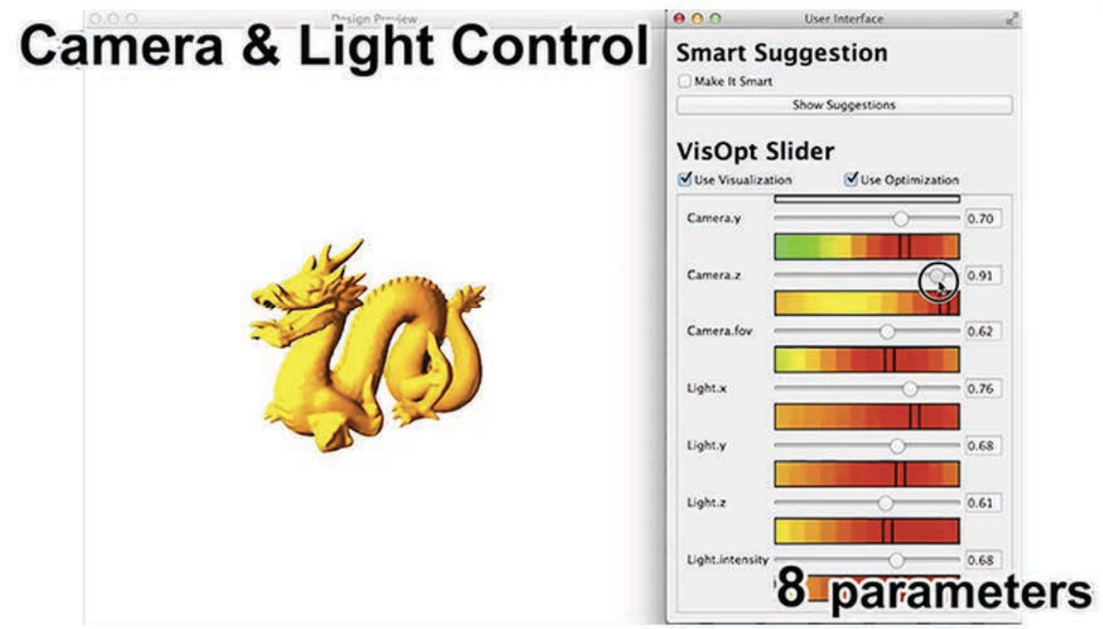
Results | Various Applications



Application to color correction of photos. The user can easily tweak parameters such as brightness and contrast.



Application to shader. Even non-expert can easily achieve realistic stainless teapot using complex shader.



Application to camera and light control in 3D scene. Our analysis successfully captures the non-linear relationship between camera and light.

Application to facial expression modeling (blendshape). Even when there are over 50 parameters, our analysis is still powerful.