Customized Slider Bars for Adjusting Multi-dimension Parameter Sets

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1 Introduction

Application softwares usually support a single set of user interaction tools that are supposed to be optimal. It is satisfactory if the user interface (UI) is really optimal for everyone. However, since the user's intent and the preference vary one by one, such fixed toolkits may cause inefficiency of the UI. For example, if you are performing physical simulation and trying to generate particular animation

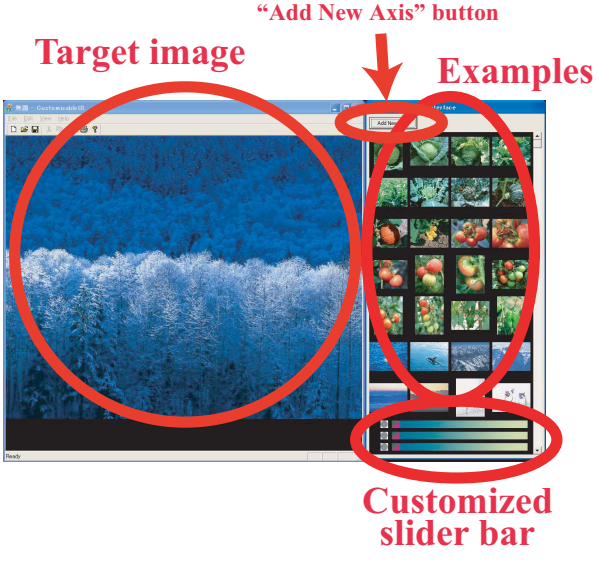

Fig. 1. UI design

A. Butz et al. (Eds.): SG 2007, LNCS 4569, pp. 230–232, 2007.

sequence of the object, you need to find a good combination of physical parameters to achieve the desired effect. To support such cases, we focus on customizing UI for independent users, instead of designing a fixed set of UI toolkit.

2 User Interface

In our system, the user explicitly defines the desired number of slider bars one by one. It is performed by giving examples for each slider bar, from the catalog of practical combination of parameters.

The user first creates a new slider bar by pressing the "Add New Axis" button (Fig. 1, the top of the right window). Then the system adds one slider bar under

Fig. 2. Dragging an image onto the slider bar

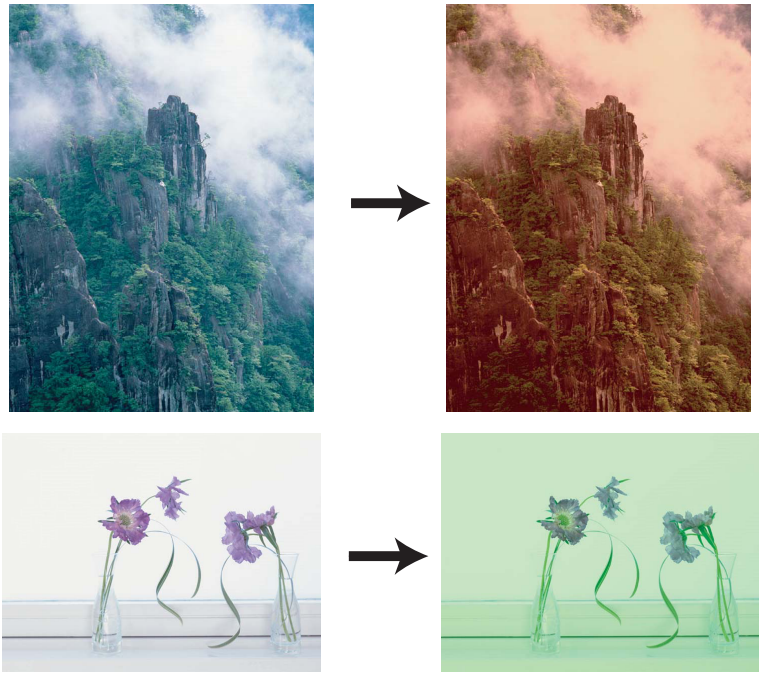

Fig. 3. Change of color specified by our system

the examples area (Fig. 1, the bottom of the right window). The user drops several desired examples onto the newly created bar (Fig. 2). The system internally computes the tendency of the dropped examples and defines the slider bar. By moving the knob on the slider bar, the user can smoothly modify parameter values and the result is displayed on the target image window (Fig. 1 left).

3 Result

We applied our technique for adjusting average color of images. The input of the system is a set of images and we take the average of each in (R, G, B) triplets. The user explores the RGB space by their customized slider bars and finds the desired color, which is then applied to the given image (Fig. 3).

4 Conclusion

We observed that customized tool bar efficiently summarizes the user's intent. However, we have not completely explored the possibility of our system. Especially, we believe that our idea can be applied to other kinds of parametrized models such as textures, bi-directional reflectance function (BRDF) and so on.

One fundamental issue is that we assume that the interpolation between example points in the parameter space can be performed linearly, with Euclidean distance metric. It is our future work to introduce a non-Euclidean distance measure to generate perceptually smooth transition in the parameter space. It is also our future work to perform user tests to verify the performance of our system.