

Image-guided weathering: A new approach applied to flow phenomena

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The simulation of weathered appearance is essential in the realistic modeling of urban environments. A representative and particularly difficult effect to produce on a large scale is the effect of fluid flow. Changes in appearance due to flow are the result of both the global effect of large-scale shape, and local effects, such as the detailed roughness of a surface. With digital photography and Internet image collections, visual examples of flow effects are readily available. These images, however, mix the appearance of flows with the specific local context. We present a methodology to extract parameters and detail maps

from existing imagery in a form that allows new target-specific flow effects to be produced, with natural variations in the effects as they are applied in different locations in a new scene. In this paper, we focus on producing a library of parameters and detail maps for generating flow patterns $\frac{1}{2} \frac{1}{2} \frac{1}{2}$ and this methodology can be used to extend the library with additional image exemplars. To illustrate our methodology, we show a rich collection of patterns applied to urban models.