ViRVIG
Visualització, Realitat Virtual i Interacció Gràfica

www.virvig.eu
C. Llorens i Artigas 4-6
Edifici U, 1er pis
E- 08028- Barcelona

Controllable Image-Based Transfer of Flow Phenomena

Bosch, Carles; Patow, Gustavo A.

Abstract Modelling flow phenomena and their related weathering effects is often cumbersome due their dependence on the environment, materials and geometric properties of objects in the scene. Example-based modelling provides many advantages for reproducing real textures, but little effort has been devoted to reproducing and transferring complex phenomena. In order to produce realistic flow effects, it is possible to take advantage of the widespread availability of flow images on the Internet, which can be used to gather key information about the flow. In this paper, we present a technique that allows the transfer of flow phenomena between photographs, adapting the flow to the target image and giving the user flexibility and control through specifically tailored parameters. This is done through two types of control curves: a fitted theoretical curve to control the mass of deposited material, and an extended colour map for properly adapting to the target appearance. In addition, our method filters and warps the input flow in order to account for the geometric details of the target surface. This leads to a fast and intuitive approach to easily transfer phenomena between images, providing a set of simple and intuitive parameters to control the process.

http://dx.doi.org/10.1111/cgf.13530

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