

IMAGE-BASED BAS-RELIEF GENERATION WITH GRADIENT OPERATION

Meili Wang, Jian Chang, Junjun Pan, Jian J. Zhang



The National Centre for Computer Animation
Bournemouth Media School
Bournemouth University
Talbot Campus,
Poole, Dorset BH12 5BB
United Kingdom

2009

| Technical Report TR-NCCA-2009-XX
| ISBN: 1-85899-123-4
| Title: image-based bas-relief generation with gradient operation
| Authors: Meili Wang, Jian Chang, Junjun Pan, Jian J. Zhang
| Key words and Phrases: Bas-relief, Gradient operation, Unsharp masking, Poisson equation
| Abstract:
| Bas-relief is a type of sculpture artwork which is carved into a plane or a surface,
| traditionally created by hand. Recently, computers have been adopted to assist the design
| and production of relief works. In this paper, we propose a novel method to generate the 3D
| mesh of a relief based on a 2D image input. Gradient operations, such as magnitude
| attenuation and unsharp masking, are introduced to convert an image into a relief. The
| Poisson equation is solved for the construction of the depth information of a relief from
| the tuned data. The final output as geometric mesh enables artists or designers to add
| additional texture and material features for their relief design. More importantly, such a
| mesh can be directly used for computer aided manufacturing as input.
| Report date: 01 March, 2009
| Web site to download from: <http://eprints.bournemouth.ac.uk/>
| The authors' e-mail addresses: mwang@bournemouth.ac.uk
| Supplementary Notes: <Accepted by The International Association of Science and Technology
| for Development (CGIM 2010)>

The National Centre for Computer Animation
Bournemouth Media School
Bournemouth University
Talbot Campus,
Poole, Dorset BH12 5BB
United Kingdom