

Physically Based Weathering Simulation of Natural Objects Based on Biological Analysis

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ABSTRACT

The Weathering effect of nature objects or natural scenes is a common phenomenon in our daily life. However, little investigation has been made to the phenomenon so far in computer graphics field. The weathering procedure on the nature objects such as plants, trees, grasses etc. is a slowly changing process, and in fact it is involved with a comprehensive drying procedure made towards the biological structure of the nature objects, in terms of the shape change of the objects & the color change of their appearance. With regard to the shape change or deformation, a physically based mechanical calculation is applied to the biological components incurred by the drying effect in our solution. On the other hand, the change of color appearance could be simulated based on the synthesis to the color spectrum of the samples collected in the weathering process of the objects. The simulation based the scheme will be demonstrated by the simulation result to the trees, grassland, fruits etc.

BRIEF BIOGRAPHY

Dr. Enhua Wu completed his BSc in Tsinghua University, Beijing in 1970 and received his Ph.D degree from Dept. of Computer Science, University of Manchester, England in 1984. Since 1985 he has been working at the Institute of Software, Chinese Academy of Sciences, as a director of the Research Dept. of Fundamental Theory and Advanced Technology until 1998. Since September of 1997, he has been also invited as a full professor of University of Macau (UM).

Dr. Wu's main interests are Realistic Image Synthesis, Virtual Reality and Scientific Visualization. Now he is an Associate Editor-in-Chief of the Journal of Computer Science and Technology (Science Press and Springer) and the editorial board member of TVC, CAVW, IJIG, IJVR, IJSI. He has been also in recent years invited as a keynote speaker or chairing works in a number of international conferences such as ACM VRST2010, CASA2011, ACM VRCAI2008-2012, IEEE VR2011-12 etc.