

REALISTIC 3D FACE MODELING AND APPLICATION RESEARCH

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ABSTRACT

At present, methods of face modelling are not satisfactory, requiring high costs and a complex algorithm. We present an algorithm for 3D specific face modelling from a front view image of a person's face. First, we globally reshape the 3D neutral face model by constructing a linear elasticity model grid. Then, local deformation is performed on the facial feature vertices to obtain a more realistic 3D model for the person. Finally, we apply texture mapping to the deformed face model with cylindrical projection to produce a realistic 3D specific face.

Keywords: Feature Point Extraction, Linear Elastic Model, Feature Point Edit, Texture Mapping

1. INTRODUCTION

Face modeling can be roughly divided into three types of methods: parameter model, physiological muscle model and visual modeling based on image. Park used the face parameter model to generate the face model; Platt and Water used the muscle model to build a virtual face; Horce generated a face model with two pieces of orthogonal photos; and Blanz put forward a face modeling method based on statistic and induction¹. Among these methods, visual modeling has many advantages, including its relatively simple process, accessible face data, and stronger sense of reality. As a result, we choose the visual modeling method using a front face photo to realize fast personalized face modeling. Our main research focus on face feature point extraction, feature points editor and texture mapping.