Abstract

Three-dimensional CAD models are usually used by designers because of their multiple uses (visualization, simulation, machining). However, nowadays, multi orthographic view engineering drawings are still widely used. Accordingly, a conversion tool for obtaining 3D CAD models from 2D drawings (known as the "reconstruction problem") is a very useful approach in a broad range of applications. The significant interest for the reconstruction problem is witnessed by the large number of works presented in the last three decades. The main object of the present work, by integrating different approaches suggested by a number of authors and rearranging them into an orderly, unambiguous and automatic procedure, is to provide a tool to help researchers and practitioners who want to deal with the reconstruction problem.
In detail the authors propose a systematic tool that allows the reconstruction of a 3D pseudo-wireframe starting from a 2D vectorial input. Such a tool is discussed in detail and has been implemented into MatLab® environment in order to validate and test the procedures. Extensive testing, carried out on a number of case studies, has demonstrated the effectiveness of the presented approach.

Reference


Index Terms

Computer Science  Computer Graphics

Key words
From 2D Orthographic views to 3D Pseudo-Wireframe: An Automatic Procedure

3D reconstruction

pseudo-wireframe

engineering drawings

computational geometry