



International Journal on Recent Researches In Science, Engineering & Technology

A Journal Established in early 2000 as National journal and upgraded to International journal in 2013 and is in existence for the last 10 years. It is run by Retired Professors from NIT, Trichy.

It is an absolutely free (No processing charges, No publishing charges etc) Journal Indexed in DIIF and SJIF.

Research Paper

Available online at: www.jrrset.com

Chief Editors 1 : Dr. M.Narayana Rao, Ph.D., Rtd. Professor, NIT, Trichy.

(Engg.&Technology division)

2 : Dr. N.Sandyarani, Ph.D., Professor,

Chennai based Engg.College, (Science division)

ISSN (Print) : 2347-6729

ISSN (Online) : 2348-3105

Volume 2, Issue 3,
March 2014

DIIF IF :1.46

SJIF IF: 1.329

Computer Aided Reverse Engineering

G. Vijaya Sankar and S.Sujin

Abstract - In this paper, methodologies and technologies for automating reverse engineering (RE) through digital imaging and computer vision are presented. The paper begins with a definition of RE in terms of generating computer-aided design (CAD) models from existing objects and components. The term computer-aided reverse engineering (CARE) is used to describe this process. With this definition, a brief overview is presented regarding the traditional approach to RE using coordinate measuring machines (CMMs). The main focus of this paper is to explore digital imaging and computer vision as an alternative to CMMs. This exploration begins with data acquisition, where the present laser-based range scanners act as a promising approach. For these scanners, explanation and highlight differences in data resolution and scanning rates and contrast those to CMM performance are presented. Next, a processing pipeline for creating CAD models using these scanners are presented. This processing includes tasks such as view registration, surface integration, patch reconstruction, model fitting, noise removal, and other functions. This paper explains these topics to help the reader understand their importance in designing an RE imaging system and the impact that various parameters have on modeling accuracy.