

INTRODUCTION TO COMPUTER-AIDED-DESIGN

Yogesh Kulkarni

October 19, 2015



1 INTRODUCTION

Why

How to model real world objects? - Design

How to put forth ideas in visual manner – Communication

How to verify that design serves the purpose – Analysis

How to get it made? – Manufacturing

All of the above can happen without Computers..but

Better if assisted by Computers/Software

That's why : Computer Aided ... (CAx)



Classification

By dimensionality: 2D/3D

2-Manifold vs Non-manifold

Precision: Exact/Approximate

What to store?

- Procedure

- Result

- Hybrid



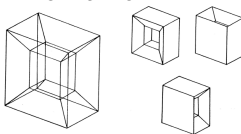
By dimensionality

2D model: Point, line, circular arc, planar curve



3D model

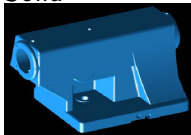
Wire frame



Surface



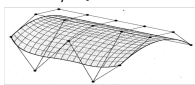
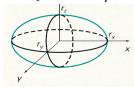
Solid



By Precision

Exact (?) model : Continuous/Smooth representation.

Explicit / implicit / parametric curves / surfaces



Approximate model

Cloud of points



Voxel

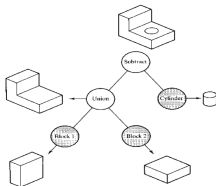


Mesh

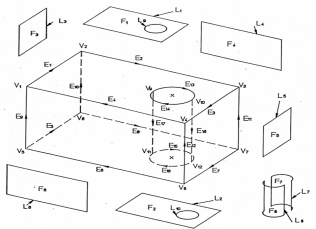


By Storage

Procedural model : CSG (Constructive Solid Geometry)



Result based model : B-Rep (Boundary representation)



Thanks ... yogeshkulkarni@yahoo.com

