

Tutorial 19: Creating drawing templates and dimensioning from polygon lines

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Complete List of all Tutorials with Publishable MATLAB Files of this Solid-Geometries Toolbox

The following topics are covered and explained in the specific tutorials:

- Tutorial 01: First Steps Using the VLFL-Toolbox for Solid Object Design
- Tutorial 02: Using the VLFL-Toolbox for STL-File Export and Import
- Tutorial 03: Closed 2D Contours and Boolean Operations in 2D
- Tutorial 04: 2½D Design Using Boolean Operators on Closed Polygon Lists (CPL)
- Tutorial 05: Creation, Relative Positioning and Merging of Solid Geometries (SG)
- Tutorial 06: Relative Positioning and Alignment of Solid Geometries (SG)
- Tutorial 07: Rotation of Closed Polygon Lists for Solid Geometry Design
- Tutorial 08: Slicing, Closing, Cutting and Separation of Solid Geometries
- Tutorial 09: Boolean Operations with Solid Geometries
- Tutorial 10: Packaging of Sets of Solid Geometries (SG)
- Tutorial 11: Attaching Coordinate Frames to Create Kinematic Models
- Tutorial 12: Define Robot Kinematics and Detect Collisions
- Tutorial 13: Mounting Faces and Conversion of Blocks into Lightweight-structures
- Tutorial 14: Manipulation Functions for Closed Polygons and Laser Cutting (SVG)
- Tutorial 15: Create a Solid by 2 Closed Polygons
- Tutorial 16: Create Tube-Style Solids by Succeeding Polygons
- Tutorial 17: Filling and Bending of Polygons and Solids
- Tutorial 18: Analyzing and modifying STL files from CSG modeler (Catia)
- Tutorial 19: Creating drawing templates and dimensioning from polygon lines
- Tutorial 20: Programmatically Interface to SimMechanics Multi-Body Toolbox
- Tutorial 21: Programmatically Convert Joints into Drives (SimMechanics)
- Tutorial 22: Adding Simulink Signals to Record Frame Movements
- Tutorial 23: Automatic Creation of a Missing Link and 3D Print of a Complete Model
- Tutorial 24: Automatic Creation of a Joint Limitations
- Tutorial 25: Automatic Creation of Video Titles, Endtitles and Textpages
- Tutorial 26: Create Mechanisms using Universal Planar Links
- Tutorial 27: Fourbar-Linkage: 2 Pose Syntheses and Linkage Export for 3D Printing
- Tutorial 28: Fourbar-Linkage: 3 Pose Syntheses and Linkage Export for 3D Printing
- Tutorial 29: Create a multi body simulation using several mass points
- Tutorial 30: Creating graphical drawings using point, lines, surfaces, frames etc.
- Tutorial 31: Importing 3D Medical DICOM Image Data and converting into 3D Solids
- Tutorial 32: Exchanging Data with a FileMaker Database

- Tutorial 33: Using a Round-Robin realtime multi-tasking system
- Tutorial 34: 2D Projection Images and Camera Coordinate System Reconstruction
- Tutorial 35: Creation of Kinematic Chains and Robot Structures
- Tutorial 36: Creating a Patient-Individual Arm-Skin Protector-Shell
- Tutorial 37: Dimensioning of STL Files and Surface Data
- Tutorial 38: Some more solid geometry modelling function
- Tutorial 39: HEBO Modules robot design
- Tutorial 40: JACO Robot Simulation and Control
- Tutorial 41: Inserting Blades, Cuts and Joints into Solid Geometries
- Tutorial 42: Performing FEM Stress and Displacement Analysis and Structural Optimization of Solids
- Tutorial 43: Performing FEM Structural Optimization (CAO) and Topological Optimization (SKO) of Solids
- Tutorial 44: Creation of solids and kinematics from 3D curves and transformation matrices
- Tutorial 45: Creation of Solids using the SG-Coder - SGofCPLcommand
- Tutorial 46: Creating Fischertechnik compatible gear boxes using SGofCPLcommand
- Tutorial 47: Creating four-joints by 3 pose synthesis
- Tutorial 52: CPL Buffers and cw/ccw Orientation
- Tutorial 53: SKOL - Soft Kill Option for Large Displacement by Yilun Sun
- Tutorial 54: Automated Design of Precision Joints by Screws or Ball Bearings
- Tutorial 54: Processing Stacks of Slices = CVLz
- Tutorial 55: Automated Design of Manipulators with Screws or Ball Bearing
- Tutorial 56: Checking Functions for Solids
- Tutorial 57: Processing Stacks of Slices = CVLz

Motivation for this tutorial: (Originally SolidGeometry 3.8 required)

```
%
% function VLFL_EXP19
```

Motivation

Final remarks on toolbox version and execution date

VLFLlicense

```
This VLFL-Lib, Rel. (2023-Oct-03), is for limited non commercial educational use only!
Licensee: Tim Lueth (Development Version)!
Please contact Tim Lueth, Professor at TU Munich, Germany!
WARNING: This VLFL-Lib (Rel. ) license will exceed at 06-Jul-2078 07:39:31!
Executed 03-Oct-2023 07:39:33 by 'timlueth' on a MACI64 using Mac OSX 13.6 | R2023a Update 5 | SG-Lib 5.4
===== Used Matlab products: =====
distrib_computing_toolbox
map_toolbox
matlab
=====
```

- *Tim Lueth, tested and compiled on OSX 10.11.6 with Matlab 2016b on 2017-03-29*
- _____, executed and published on 64 Bit PC using Windows with Matlab 2015a on 2015-xx-xx_

Published with MATLAB® R2023a