How to use the “MomenTumV2CadLayouting“ AutoCAD Plugin

1. Activate the “MomenTumV2CadLayouting“ Plugin

There are two possibilities to activate this plugin:

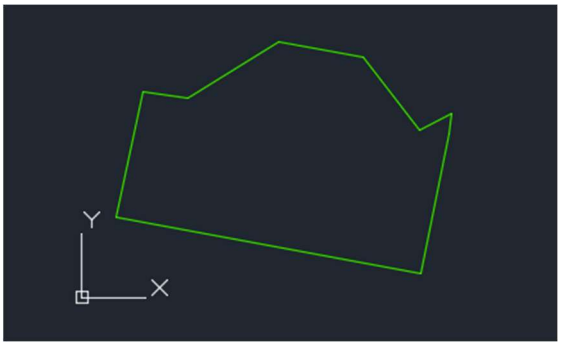
a. By adding an appropriate entry in the Window’s Registry (this requires a specific knowledge of the Window’s Registry. Not recommended for average users).
b. Via “netload“ command in the command line. It opens a window in which you can browse to the saving directory of the plugin’s .dll-file.

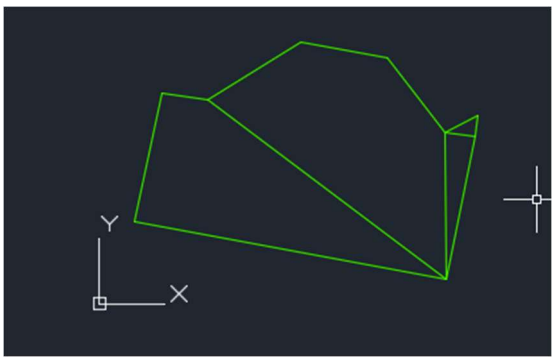
It is not necessary to load the plugin before making the drawing. It is even possible to choose an existing drawing and then convert it to a .xml-file by using the this plugin.

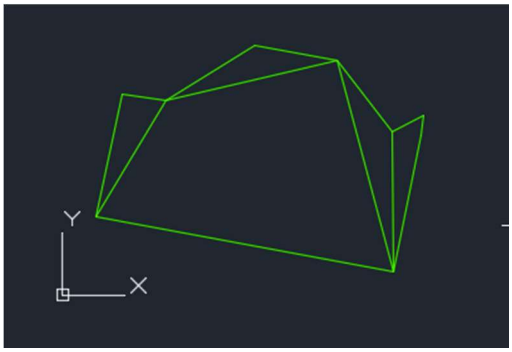
2. Draw the scenario objects

The plugin can only handle straight forms. No circles or arcs are allowed. There is no approximation algorithm implemented yet. Please approximate round shapes with the aid of lines or polylines manually. But it does not really make a huge difference whether you draw lines or polylines. Just in some cases the use of polylines speeds up the algorithm a little bit.

Some pedestrian simulation algorithms only work with convex shapes of polygons. Please triangulate your concave drawn polygons manually into multiple convex ones. The following pictures show an example of a concave polygon and two possible convex triangulations.







Furthermore All drawing objects you want to appear on the "Origin", "Intermediate", "Destination" and "Solid" layers have to be closed polygons. The objects on the "Wall" layer may be lines and polylines with different start and end points, but also closed polygons in case of the outer wall of the whole scenario area. To activate the close property of the polyline you can either right-click on it to change it manually or use the "ped_joinAndCloseLines" command.

!!! AutoCAD crashes if you ignore one of the above-mentioned advice !!!

3. Convert to .xml-file

Before executing "ped_convertAllExistingObjects" please use the "ped_joinAndCloseLines", "ped_allocateObjectsToLayers" (if not done manually) command at least once. Otherwise you could get an empty or incorrect .xml-file.

4. Overview of „MomenTumV2CadLayouting " commands

By typing "ped_" into the command line, you will get a short overview of all the existing plugin commands:

"ped_convertAllExistingObjects":

This is the command that finally creates your .xml-file. At first it will ask for the measurement unit in your drawing, e.g. 1 unit in the drawing is equivalent to 1 m/dm/cm/mm. The .xml-file will be saved in the path chosen via the safe file dialog.

“ped_importXMLtoDrawing“:

This is a command to load an existing .xml-file of a scenario and convert it into drawing objects in AutoCAD. The objects have the same restrictions as mentioned above for the other way around.

“ped_joinAndCloseLines“:

This command joins all touching lines to one each and closes all opened polygons, those polylines with the same start and end point.

“ped_triangulateAllObstaclePolygons“:

This command triangulates all “Solid“polygons. You do not have to do all of those things manually. It saves a lot of time depending on the number of objects in your drawing.
Now and then the algorithm has its problems if a polygon is too complex, but you can try the method before triangulating manually and reset the changes via “undo“ button if it does not work correctly.

“ped_allocateObjectsToLayers“:

This method automatically allocates the drawing objects to fitting layers. If your areas are already drawn and allocated to the specific layer the algorithm will handle them as solid obstacle objects, so you have to reset them to the right layers via “ped_selectObjectForConversion“ again.

“ped_hideExternalLayers“:

This command is quite self-explaining. It hides all layers except the standard plugin layers (“Origin“, “Intermediate“, “Destination“, “Wall“, “Solid“).

“ped_hideMomenTumLayers“:

This is the opposite to the “ped_hideExternalLayers” command. It (re-)activates all external layers and hides the pedestrian simulation layers (“Origin“, “Intermediate“, “Destination“, “Wall“, “Solid“).

“ped_selectObjectForConversion“:

With this command you can switch a drawing object to one of the pedestrian simulation’s layers (“Origin“, “Intermediate“, “Destination“, “Wall“, “Solid“). After executing this command you get the layer names as suggestions. Select your target layer for the drawing object by clicking on the appropriate suggestion or typing the first letter of it in the command line and confirm with Return on your keyboard. Then select your object with the mouse and press Return again.