Pylayers Plugin Documentation

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I. Introduction

Pylayers Plugin is a project linked to the open source Raytracing tool PyLayers.

The aim of the plugin is to edit a layout file, exploitable by the PyLayers tool.

Please note that for editing real Building,, the PyLayers plugin can be used simultaneously to the Pic Layer plugin. PIC Layer is a jOSM plugin that creates a layer from an image.Then, it can be used to describe the internal architectural plan of the building. This plan will provide a support for the user to help editing the building in JOSM.

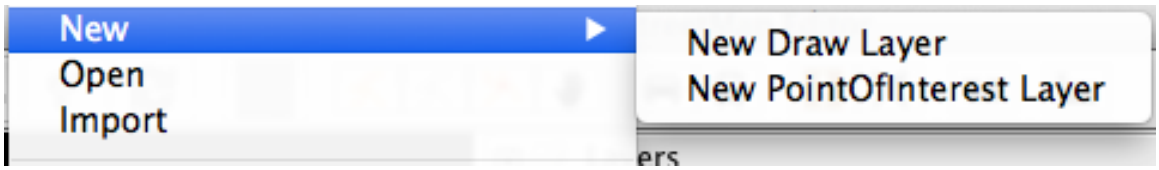
II. Installation

1. Copy "PyLayers.jar" into ~/.josm/plugins (create the plugins directory if don't exists yet)
2. Open jOSM
3. Go to Edit => Preferences and select the Plugin tab (the one with the electrical socket image)
4. Search for "Pylayers" and check the box
5. Press OK and restart jOSM

III. Quick Start

When launching the JOSM software, the Pylayers plugin loads automatically. A new menu will be added to the menu bar to access the various features offered by our plugin.

The Pylayers Plugin menu offers different features that we will detail below.



1. New Menu

This menu allows the user to create a new layer for building shaping.

Our plugin offers two types of layers:

- The Draw Layer type.
- The Point Of Interest Layer type.

The Draw Layer type as the Point Of Interest Layer type on its launch disable JOSM tools used for editing the Open Street Map, and activate at the same time depending on the type of layer selected , the plugin features compatible with Pylayers.

Figure 1 JOSM Tools

Figure 2 Pylayers Tools

2. New Draw Layer

Once the new Draw Layer is open, we find the following tools in the toolbar on the left:

a. Tools

Select Mode tool

This tool allows you to select segments or points already drawn.

It has the same functionality as the select tool of JOSM software but the difference between these two is that a double click on a segment will launch the segment data editing window(which is specific to Pylayer plugin).

Two Nodes Way Tool

Unlike the basic tool of JOSM which allows you to draw segments formed of several points, this tool allows you to draw segments each formed only of two points. This tool once launched, the user enters the drawing mode. To exit this mode, simply use the Escape key.

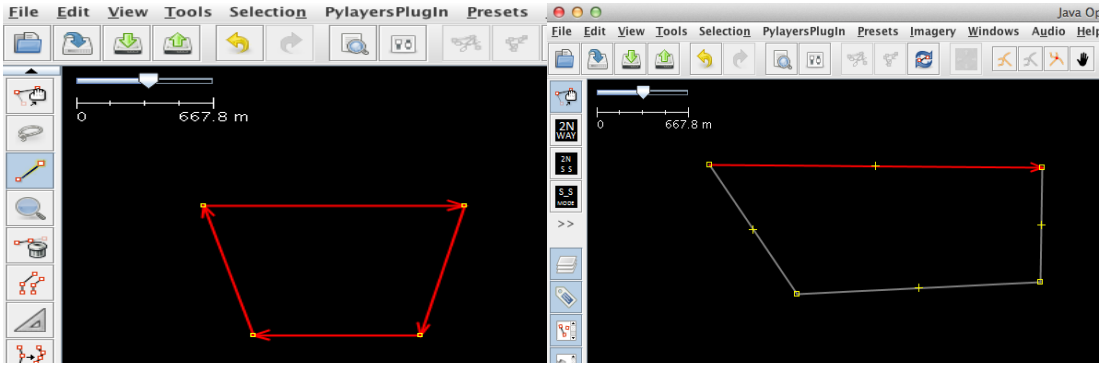


Figure 3 Draw Tool from Josm: 1 segments 4 Nodes

Figure 4 Two Nodes Way Toll from Pylayers: 4 segments with 2 nodes

Two Nodes Sub Segment tool

This tool is much like Two Way Node but the difference is that this tool allows you to draw sub segments, and not segments, while always respecting the rule that a sub segment can not have more than two points. Unlike the drawing mode Two Way Nodes, this mode turns off automatically at the end of the entry of a sub-segment, so there is no need to press the Escape key to exit this mode.

The Sub Segment Mode tool

This tool allows you to edit sub segments as the Two Nodes Sub Segment tool but by using a different way.

To use this tool, you must enter the width of the sub-segments in the edit window (see Edit Options menu), and then activate the mode by clicking the button of this tool. Once enabled, the user just needs to click on any segment once to create a sub-segment within it.

When these tools are activated and ready for use, the new sub-menus appear in the menu PylayersPlugin:

- Edit option
- Cut a way
- Grid
- Specific selection
- Show / Hide sub segment Number

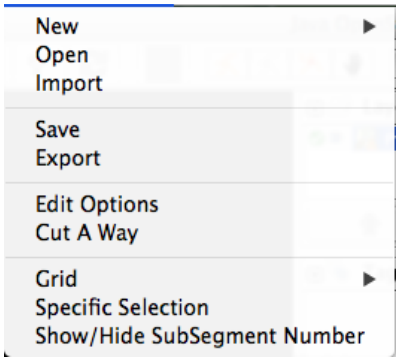


Figure 5 Pylayers Plugin Menu

b. Edit Menu Options

This menu allows the user to enter or edit the data of segments or sub-segments.

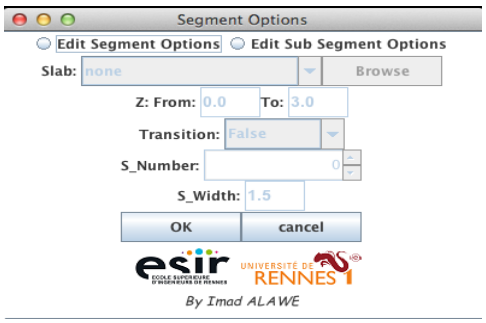


Figure 6 Edit Options Window

For segments

To edit segments, just select Edit Segment Options, and the characteristics of the segment will be available for the user to make his choice.

The slab list when the software is launched is empty. To fill it, load a database which is an ini file simply by clicking the Browse button.

Once loaded, it is no longer necessary to reload it each time. It will be stored in memory.

After choosing the characteristics of the segment, the user has to click ok or press the enter button to confirm his choice.

Following this, he must choose the Two Way Nodes tool explained above and start editing its building.

For Sub segments

Once Sub Segment Options is selected, the characteristics of the sub-segments will be accessible. After that the user must set the number of sub-segment to be included in the segment that he is currently editing.

Once he made his choice, it's completely similar to edit segment options. He still has to load its slab database and then define the slab, height and the transition of each sub-segment based on the number he chooses.

Finally he has to confirm by clicking OK or pressing the enter key.

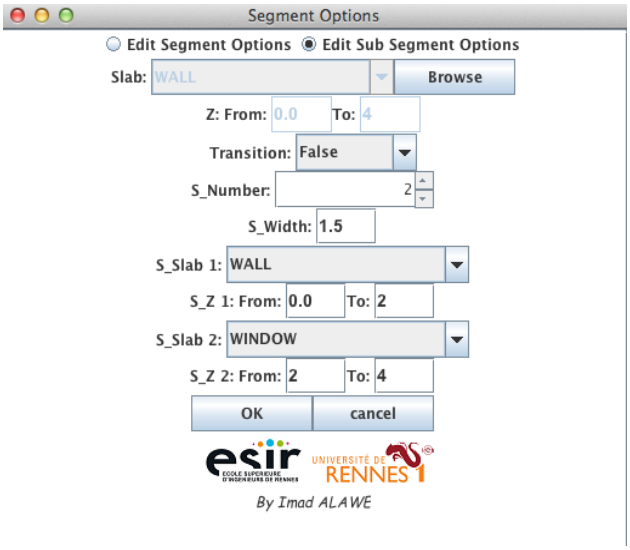


Figure 7 Example of Sub segment characteristic edition

Remark

- If the user enters without changing the S_width field he will be only able to edit the sub segments with the Two Nodes Sub Segment tool already explained above. To access the Sub Segment Mode tool, he must change the S_Width field to indicate the sub segment width (see The Sub Segment Mode tool).
- The software includes algorithms of verification for the selected heights of segments or of sub-segments in order to avoid overlapping.

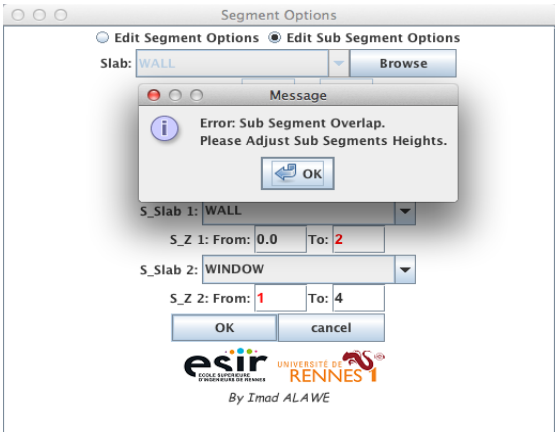


Figure 8 In case of overlapping

- This menu enables the user to define the characteristics of segments or sub-segments to be edited by clicking the Edit Options menu without selecting

any segment or sub-segment, or to change the characteristics of existing segments or sub segments by clicking Edit Options after selecting the segments or the sub-segments to edit.

c. Cut A Way

As its name suggests, this option allows the user to cut a segment formed of several points into many segments formed of two points.

Following the need that segments must have only two points to assure the compatibility with Pylayers software, we decided to design this feature to make the work easier for the user.

For example, if a plan has already been published in the OSM format and not in the plosm format, the user only has to use this tool on his plan to make it compatible with the Standards of Pylayers.

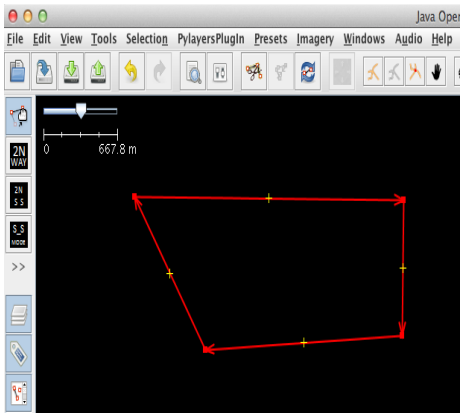


Figure 9 A Segment formed by 4 Nodes

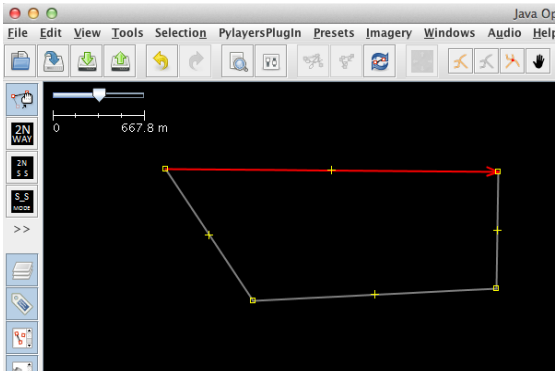


Figure 10 After Using Cut A Way Tool we can find 4 segments with 2 Node for each

d. Grid

This option allows the user to:

- Show a grid.
- Activate Snapping to grid.
- Snap selected ways or Nodes to grid.

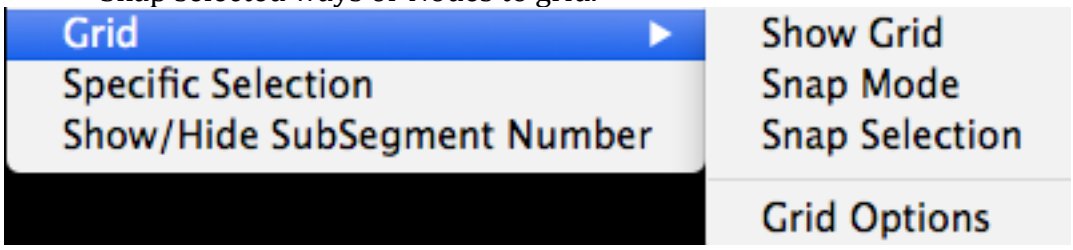


Figure 11 Grid Option

Note that the user can use the grid without showing it or can just see it without using it. Also, the user may not see the grid even if he selected show grid and that due to a ratio between the zoom level and the step chosen.

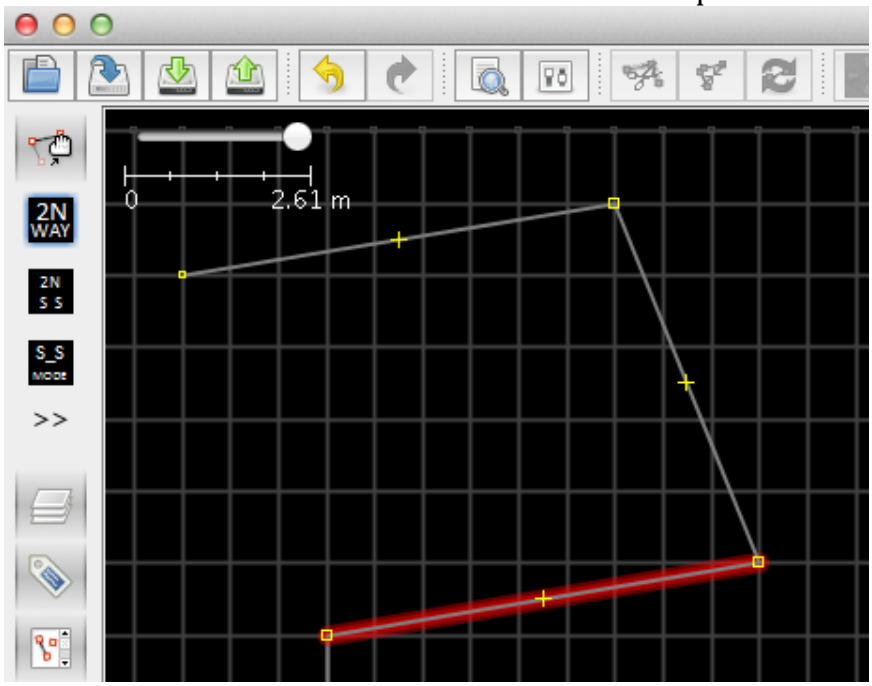


Figure 12 Preview Of The Grid

e. Show Hide subsegment Numbers

the Show / Hide subsegment Number function was built To help the user visually while editing his building. This function will display above each segment the number of sub segment within it.

This was done simply by adding a tag (meta data) for each segment, which corresponds to the number of sub segments in each segment.

The visual display is managed by a mapCSS file type located in the software directory.

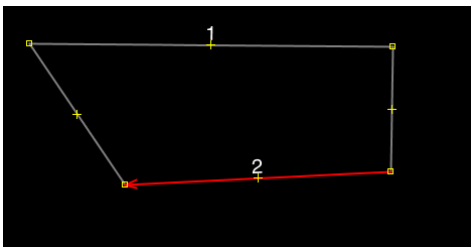


Figure 13 Show Hide Sub Segment Number

3. Import /Export

Once the plan edition is finished, the user may export the plan into the '.ini' PyLayers-compliant format.

As well, any preexisting layout previously edited with PyLayers can be loaded into the PyLayers jOSM plugin, using the import feature.

4. New Point Of Interest Layer (Upcoming Feature)

This layer is dedicated to allow the user to mark points of interest such as access points, antennas, etc. ...

This layer contains just two tools:

The Select tool

This tool allows you to select a point of interest already entered. In this type of Layer if you double click on an item, it opens a new window that will allow the user to change the name of the item, whereas if you double-click an empty area, it will change the name to use for the next items.

The POI Mode tool.

It marks points of interest. Note that on a new layer, the name selection window is automatically displayed on the first entry of points.

5. Open And Save (Upcoming Feature)

If the user wishes to edit building from an existing file, as all software he should click on open in PylayersPlugin menu and select his plosm or ppoi file.

Note that the user can also use ini files by clicking on PylayersPlugin menu and than import.

As for saving, also as all software the user have to click on PylayersPlugin menu and choose save.

Note that the user can save in an ini file type by clicking on the PylayerPlugin menu and then export.