
las4windows

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Kenny Larrieu, Sebastian Schwindt

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las4windows is forked from [GCS_scripts](#) by [Kenny Larrieu](#). The original code is designed for *Python2* and the commercial `arcpy` library. The tweaked codes of *las4windows* run with Python 3.8 and work without `arcpy`. This repository only uses the GUI for lidar processing with [LASTools](#).

Because *LASTools* is proprietary, its executables can hardly be run on Linux or other UNIX-based systems. This is why *las4windows* is a *Windows-only* (*nomen est omen*).

PREREQUISITES

LASTools is used for LiDAR Data Processing and can be downloaded [here](#).

Python 3.x dependencies are provided with `requirements.txt` (most modern IDEs will provide to auto-install the packages listed in `requirements.txt`). Otherwise, make sure to install the following libraries in the *Python3.x* environment:

- `numpy`
- `scipy`
- `tkinter`
- `pandas`

CODE DOCUMENTATION

2.1 The GUI script

Things to consider adding: choice of las or laz output set default values for lasground_new params clip structures step lasclassify params to identify buildings use veg polygon (if given) instead of inverse ground polygon to clip veg points

`LiDAR_processing_GUI.get_largest(directory)`
returns name of largest file in directory

`LiDAR_processing_GUI.las_files(directory)`
returns list of all .las/.laz files in directory (at top level)

`LiDAR_processing_GUI.lof_text(pwd, src)`
creates a .txt file in pwd (LAStools bin) containing a list of .las/.laz filenames from src directory

`LiDAR_processing_GUI.pd(filename)`
returns point density from lasinfo output .txt file

`LiDAR_processing_GUI.pts(filename, lastoolsdir)`
returns number of points in las file

2.2 File and processing functions

`file_functions.ar1_acorr(series, maxlags=")`
Returns lag, autocorrelation, and confidence interval using geometric autocorrelation for AR1 fit of series

`file_functions.browse(root, entry, select='file', ftypes=['All files', '*'])`
GUI button command: opens browser window and adds selected file/folder to entry

`file_functions.check_use(filepath)`
Checks if a file or list of files is in use by another process If the file cannot be opened or there is an associated .lock file, it throws an exception.

`file_functions.cmd(command)`
Executes command prompt command

`file_functions.cox_acorr(series, maxlags=")`
Returns two lists: lags and autocorrelation, using Cox variant 3 of ACF

`file_functions.ft(x, y)`
Returns the fourier transform magnitude of the x,y data

`file_functions.get_all_files(dir, prefix="", suffix="", nesting=True)`
Returns list of all files in directory

Parameters

- **dir** (*str*) – the directory of interest
- **prefix** (*str*) – if provided, files returned must start with this
- **suffix** (*str*) – if provided, files returned must end with this
- **nesting** (*bool*) – if True, looks in all subdirectories of dir. If false, only looks at top-level.

`file_functions.init_logger(filename)`

Initializes logger

`file_functions.split_list(l, break_pts)`

returns list *l* split up into sublists at break point indices

`file_functions.split_reaches(l, new_reach_pts)`

splits *l* into sections where *new_reach_pts* contains the starting indices for each slice

`file_functions.white_noise_acf_ci(series, maxlags=)`

Returns the 95% confidence interval for white noise ACF

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