cLASpy_T
User Manual

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Chapter 1

Introduction

1.1 About cLASpy_T

cLASpy_T means *Tools for classification of LAS files with Python and machine learning libraries* → Classification LAS Python Tools.

cLASpy_T uses scikit-learn machine learning algorithms to classify 3D point clouds, such as LiDAR or photogrammetric point clouds. Data must be provided in a LAS ou CSV file. Other formats should be supported later, such as GEOTIFF or PLY, and other machine learning libraries too, such as TensorFlow.

The project was started in 2020 by Xavier PELLERIN LE BAS and the Remote Sensing Group of the M2C laboratory[1]. The *cLASpy_T* program is distributed under the CeCILL licence, version 2.1, see the licence_en.txt file.

1.2 Purpose of cLASpy_T

cLASpy_T was developped to friendly use machine learning algorithms to classify or segment 3D point clouds.

Roughly, the program formats the input point clouds provided by LAS or CSV files, to pandas DataFrames and numpy arrays in order to be compatible with Python machine learning algorythms, such as scikit-learn or TensorFlow. *cLASpy_T* writes the output classified point clouds in the same format as the input data, *i.e.* LAS or CSV.

[1] https://m2c.cnrs.fr/en/continental-and-coastal-morphodynamic-laboratory/

Chapter 2

Installation

This chapter describes how to install the Python 3 interpreter, the dependancies and *get the cLASpy_T* program.

2.1 Install Python 3

cLASpy_T is a Python 3 based program. It needs a Python 3.7 interpreter installed or earlier versions. See the Download section of the Beginners Guide[1] from the Python documentation.

2.2 Install dependancies

Once Python 3 interpreter installed, *cLASpy_T* requires the following dependancies:

- joblib (0.17.0)
- matplotlib (3.3.3)
- numpy (1.19.0)
- pandas (1.1.2)
- psutil (5.8.0)
- pylas (0.4.3)
- PyYAML (5.3.1)
- scikit-learn (0.23.2)
- scipy (1.5.4)

[1] https://wiki.python.org/moin/BeginnersGuide/Download

2.3 Get cLASpy_T source code

Chapter 3

Usage

3.1 on Windows

3.2 on Linux