A screenshot of a social media post

Description automatically generated

For this assignment, you will address a real-world **binary** classification problem where the goal is to identify sinkholes from LIDAR data. [This documentPreview the document](https://templeu.instructure.com/courses/67028/files/6795936/download?wrap=1) explains the data in more details. You will be provided with [training examplesPreview the document](https://templeu.instructure.com/courses/67028/files/6795990/download?wrap=1) with ground truth labels and unlabeled [test examplesPreview the document](https://templeu.instructure.com/courses/67028/files/6795992/download?wrap=1). Save your predictions (scores/probabilities not binary labels) of the test examples in a file called '**pred.csv**' which has the same format as [this sample filePreview the document](https://templeu.instructure.com/courses/67028/files/6795991/download?wrap=1).

The goal of this assignment is for you to apply machine learning techniques to a real-world problem. It is expected that you will use both material from class and outside resources (e.g., papers, code libraries) as part of your work. Any attempt to obtain labels for the test examples using approaches outside the realm of machine learning will treated as an academic integrity violation and dealt with harshly.

In a ZIP file, you will submit your assignment code (pa4.py) and a README text file (pa4.txt) describing how to run the code and reproduce your results. Your code will be graded based on the Code Submission Guidelines described in the course syllabus. You are allowed to use any external helper functions and libraries (giving appropriate credit, of course). This is a programming assignment, so using a GUI-based tool (e.g., Weka) will not get you much credit here.