Jury Member Report – Doctor of Philosophy thesis.

Name of Candidate: Emre Ozdemir

PhD Program: Engineering Systems

Title of Thesis: Geospatial point cloud classification

Supervisor: Associate Professor Alessandro Golkar

Co-supervisor: Dr. Fabio Remondino, Bruno Kessler Foundation

Name of the Reviewer: Clément Fortin

I confirm the absence of any conflict of interest	
	Date: 29-11-2021

The purpose of this report is to obtain an independent review from the members of PhD defense Jury before the thesis defense. The members of PhD defense Jury are asked to submit signed copy of the report at least 30 days prior the thesis defense. The Reviewers are asked to bring a copy of the completed report to the thesis defense and to discuss the contents of each report with each other before the thesis defense.

If the reviewers have any queries about the thesis which they wish to raise in advance, please contact the Chair of the Jury.

Reviewer's Report

Reviewers report should contain the following items:

- Brief evaluation of the thesis quality and overall structure of the dissertation.
- The relevance of the topic of dissertation work to its actual content
- The relevance of the methods used in the dissertation
- The scientific significance of the results obtained and their compliance with the international level and current state of the art
- The relevance of the obtained results to applications (if applicable)
- The quality of publications

The summary of issues to be addressed before/during the thesis defense

The submitted thesis is very well written and its structure is quite logical. It provides in Chapter 1, a good introduction to the topic of Geospatial point cloud classification. The Literature review is extensive and provides a critical review of previous work.

The introductory chapters are exceptional for their clarity and are very well written.

The topics covered are all very relevant to the research questions raised and the methods used provide a solid basis of verification of the obtained results.

Emre Ozdemir has published a significant set of high-level publications based on his research work, which widely support the high quality of the research results obtained. The thesis proposes state of the art solutions and proposes promising future avenues of development.

The results obtained are highly applicable and the code included in the Appendices can be concretely applied to real point cloud classification problems of significant size.

I include a few specific comments :

1) On page 56, in the paragraph on novelty, the author mentions : "It can be generalized to process unseen datasets…" but this concept is never explained in detail and it is neither discussed in the discussion and conclusion. What is the importance and applicability of this feature?
2) In figure 5.4, the shown process in the right column goes from "dense" to "dropout" to "dense" again. There are certainly differences between the 2 "dense" sets but this is not explained in the text.
3) There are a number of articles missing before words. The text must be carefully check for the final version.
4) There are a number of blank pages in the thesis which could lead to confusion as to a possible printing error, even in pdf format. I suggest to remove those.

Provisional Recommendation

☒ *I recommend that the candidate should defend the thesis by means of a formal thesis defense*

☐ *I recommend that the candidate should defend the thesis by means of a formal thesis defense only after appropriate changes would be introduced in candidate's thesis according to the recommendations of the present report*

☐ *The thesis is not acceptable and I recommend that the candidate be exempt from the formal thesis defense*