Dear Editor,

We wish to submit an original research manuscript entitled “Decoding (urban) form and function using spatially explicit deep learning” for consideration by the Landscape and Urban Planning. We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

The paper builds on previous publications by the same authors, that introduced a classification of space into "spatial signatures" based on form and function of each bespoke spatial unit across the entirety of Great Britain. The presented manuscript uses the classification as one of the data inputs, focusing on application of deep learning and spatially explicit methods built on top it, and their ability to decode "signatures" from openly available satellite imagery. The previous publications are foundational to the presented work and for that reason, the references are not anonymized. We hope that their inclusion will not give away the authorship of this text.

The method offers a novel approaches of chip sampling, making use of geographical nature of satellite imagery, and an application of spatial modeling on top of the probability matrices provided by conventional deep learning computer vision models.

The work is fully reproducible with code, data, and a reproducible containerized environment, which all will be linked from the manuscript upon acceptance for double-blind peer-review.

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

On behalf of the authors,

Martin Fleischmann, Charles University