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ML upscaling based on ITZ-properties MAGICON

Kelsey Lin

Y.C.Lin@tudelft.nl



Erik Schlangen

Erik.Schlangen@tudelft.nl

Iuri Rocha

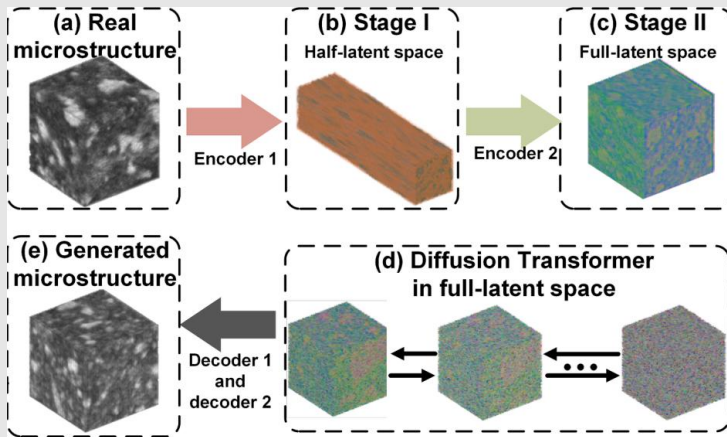
I.Rocha@tudelft.nl



Funding/agencies

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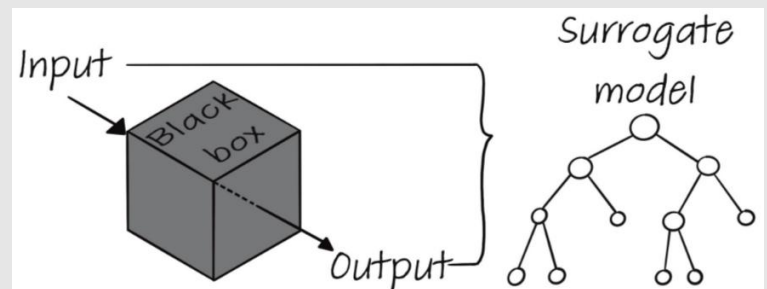


Objective of the research

The objective is to develop a probabilistic, ML-driven framework that links mixture design, ITZ properties, microstructure, and macroscopic performance of sustainable concrete. The research aims to build the relationships between the concrete recipe and ITZ characteristics, and to understand how ITZ governs mechanical and transport behaviour in macroscale.

Method of the research

A generative model will be developed to produce microstructures conditioned on ITZ properties and the meso-scale structures. These generated structures will serve as input for numerical modelling to evaluate mechanical and transport properties. To reduce computational cost, a surrogate model will be trained to learn the mapping between geometry and performance.



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