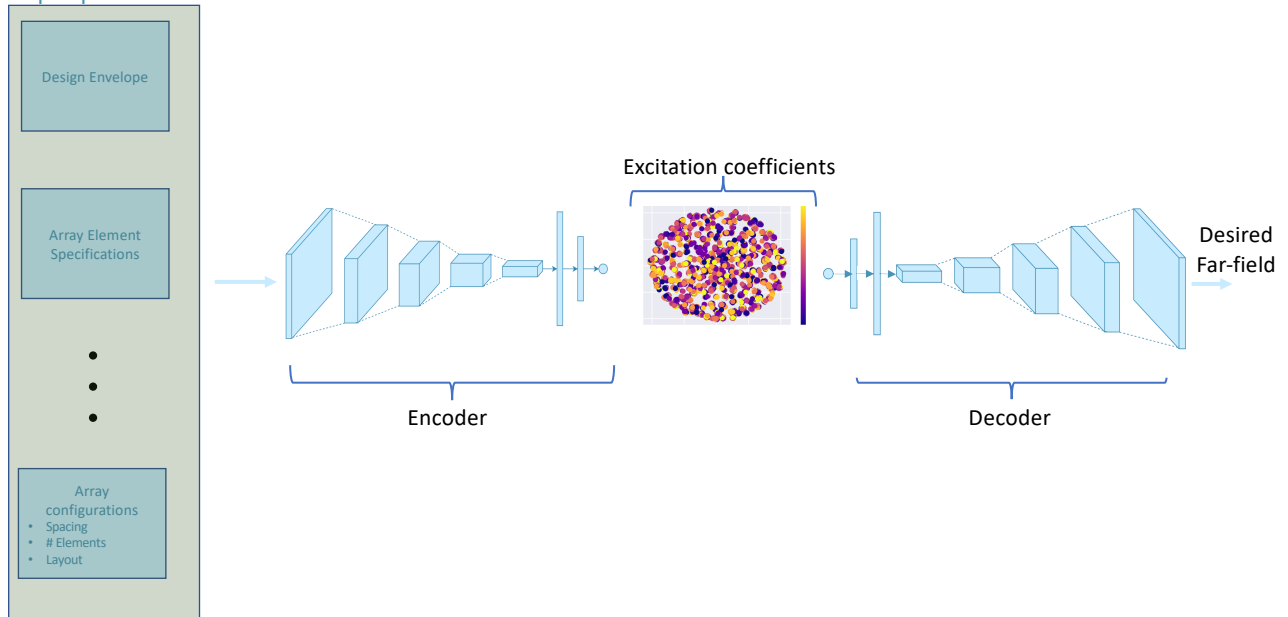


Input parameters:



Activity title: FAST DESIGN ALGORITHMS FOR ANTENNA ARRAYS USING MACHINE LEARNING

Document type: Executive summary

Activity type: Early technology development

OSIP Channel/Campaign: (v1) Early Technology Development - Proposal Drafting Phase

Affiliation(s): TICRA (Prime)

Activity summary:

The work carried out under the ESA Contract No. 4000139341/22/NL/GLC/ov reports on a new machine learning-based software prototype for designing and optimising phased array antennas. The prototype can rapidly and accurately compute excitation coefficients for large-scale antenna arrays across diverse configurations and far-field requirements. The prototype relies on tailored neural networks integrating structural physics and domain knowledge using an encoder-decoder structure. Results indicate that the prototype has a significant potential to outperform traditional synthesis methods, offering a promising new tool for antenna engineers, enabling near real-time design and optimisation for phased antenna arrays.

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