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URBAN ASSEMBLAGE: THE CITY AS ARCHITECTURE, MEDIA, AI AND BIG DATA.

• **Paper / Proposal Title:**

Between the Promenade and the Seafront – A Generative Adversarial Network Methodology for the Transposition of Architectural Style towards a new Building Typology in Morecambe.

• **Author(s) Name:**

Des Fagan: Head of Architecture

• **University or Company Affiliation:**

Lancaster University,

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Bailrigg House,

Lancaster

• **Presentation Method.** I would like to:

i. present via skype (with a written paper)

• **Abstract (300 words):**

The research considers the context of the Morecambe seafront as uniquely positioned for wider economic investment via the transformative new Eden North project (Grimshaw Architects). The research utilises a training dataset (hundreds of 2D orthographic façade photos) of existing architectural buildings along the seafront (including the grade II* listed Wintergardens, train station and 60's amusement arcades) comparing these with the Eden North proposal, to interpolate and automate a speculative 'new' urban form transposed in the empty space between the historic seafront of Morecambe and the Eden North building, sited on the promenade.

The training data and GAN methodology allows existing architectural style to be learnt and speculated upon to automate a new building typology inbetween the proposed Eden North and the existing seafront that is uniquely contextual. The form is altered by a series of multi-optimisation criteria suited to the competing requirements of a wide range

of key stakeholders including local business owners, tourists, residents and planning officers.

The new method tests the status of training data and datasets in relation to the intellectual property rights of the original architect author of the designs. The work concludes with a user evaluation of the outcome, speculating on the increasing impact of machine learning on the role and authorship of the architect.

• **Author Biography (200 words each):**

Des is Head of Architecture at Lancaster University. He has lectured extensively on interdisciplinary approaches to community and business engagement. Des's field of interest is on Optimisation, AI and Machine Learning as an approach to problem solving. He achieves this through spatial and operational methodologies learned during his time as an architect, by using algorithmic and logistical software to improve outcomes. In practice, this involves multiple activities - ranging from the rationalisation of complex geometries - to the facilitation of product or service development between user groups and the industries that provide them.

Des was the lead architect for international award-winning practices prior to working in academia; most recently as the Project Architect for the Olympic Village Scheme for London 2012 at Glenn Howells Architects, and as Lead Architect at Zaha Hadid Architects for the Glasgow Transport Museum - winner of the 2013 European Museum of the

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