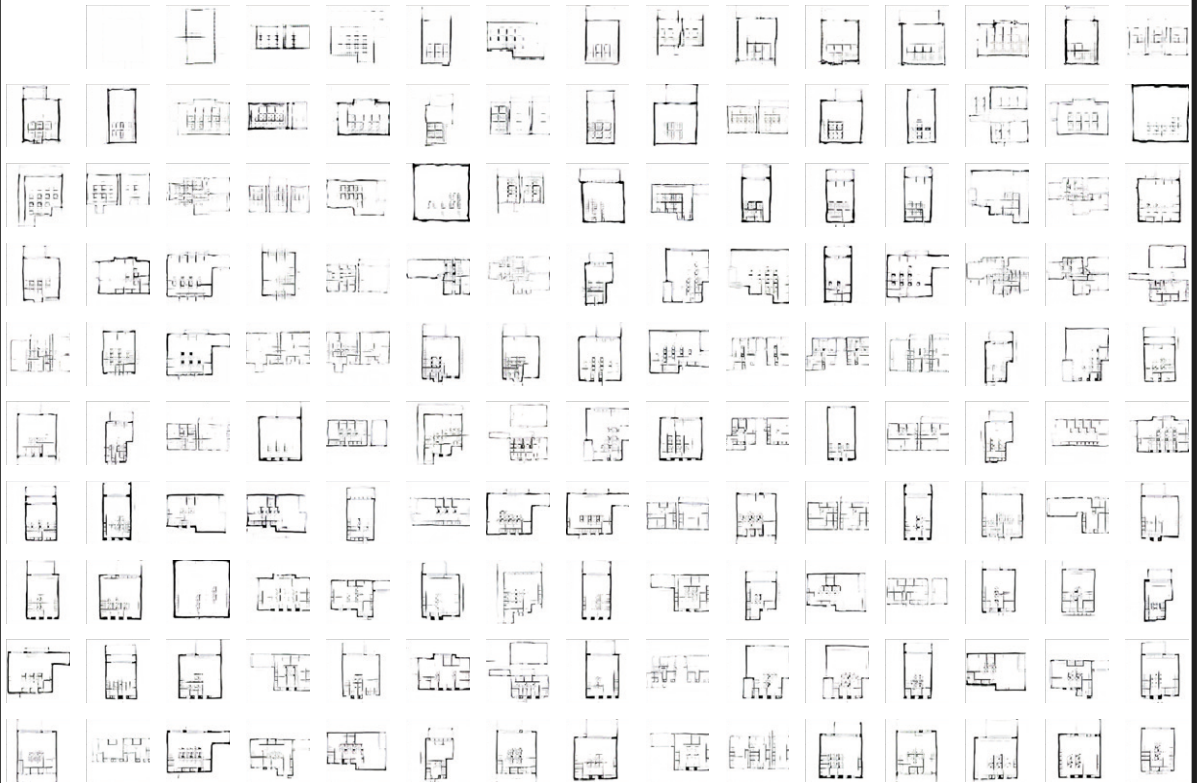


FABIAN SELLBERG

DEEP ARCHITECTURE

-Machine learning and the future of Architecture



MATERIAL & TURN

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This thesis explores the use and potential application of machine learning in the field of architecture. It aims to provide a framework for continued research as well as to explore and advance neural networks use in practical and conceptual stages of design processes. This paper will go in depth on a select few emerging systems that will be trained and applied on architectural drawings.

Machine learning is a rather old concept derived from mathematics and statistical methods. But due to new technological advances in processing and computing this technology is now more readily available and can be processed on most home computers this provides the base of the thesis.

As a starting point unsupervised learning will be explored which means that the human input is kept low. Examples from supervised and reinforcement learning will also be touched upon and tested within an architectural framework.

When a sample of systems have been developed a series of interviews with architects invested in generative design and automation is carried out. These interviews

both test the methods developed and provide insight on the thoughts on machine learning by architectural practitioners.

These interviews provide the base of discussion material where I look at how machine learning affects the profession today and what is needed from the technology to be able to integrate itself into the architectural design process.

The focus of this thesis is thus on the process and method of the creation of these systems and not in a typical end result. The goal of the project is that the systems will generate relevant and inspiring results. From the results a discussion will form on machine learning and the future of architecture.

Keywords : Architecture, Machine learning, Neural networks, Deep learning, Floorplan, Facade, Architectural drawings, Generative networks, Creative networks, Generative adversarial networks, Convolutional networks, cGAN, GAN