

**CONCORSO PUBBLICO, PER ESAMI, A N. 1 UNITÀ DI CATEGORIA D, POSIZIONE ECONOMICA D1, AREA TECNICA, TECNICO-SCIENTIFICA ED ELABORAZIONE DATI, PER LE ESIGENZE DEL LABORATORIO MANIFATTURA MODELLI E SIMULAZIONI PER L'ARCHITETTURA DEL DIPARTIMENTO DI ARCHITETTURA DELL'UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II (COD. RIF. 2236)**

**Quesito 1 (argomenti della prova scritta):**

- Il candidato definisca la fase di “nesting” e ne espliciti un esempio.

**Quesito 2 (software per la gestione del progetto di architettura):**

- Il candidato definisca la categoria di software BIM e parli nello specifico di un software (BIM) di sua scelta.

**Quesito 1 (argomenti della prova scritta):**

- Il candidato descriva un esempio di form-finding applicato ad una tipologia strutturale di suo interesse.

**Quesito 2 (software per la gestione del progetto di architettura):**

- Il candidato elenchi i software di rendering di sua conoscenza e ne indichi i funzionamenti di base.

**Quesito 1 (argomenti della prova scritta):**

- Relativamente alla progettazione computazionale, il candidato approfondisca il concetto di “progettazione parametrica”.

**Quesito 2 (software per la gestione del progetto di architettura):**

- Motori di rendering real time ed evoluzione futura.

## QUESITO DI INGLESE

All of a sudden, AI is everywhere. It is on our phones opening them up through facial recognition, identifying friends on Facebook and feeding us news and advertisements on our computers, reminding us of meetings finishing off sentences and filtering out spam; in our homes in the form of Alexa, Cortana and other AI assistants controlling robots, floor cleaners and regulating environmental control systems; and in our cars, giving directions, finding parking spaces and notifying us if we stray out of lane. Meanwhile, self-driving cars are already here. AI is changing every aspect of our existence, and architecture is no exception where it has already infiltrated the architectural office. Embedded in our software tools it is changing the nature of design. The hottest topic in progressive schools and practices AI is now the latest buzzword in architectural culture. Forget Parametricism and 3D printing – the 2020s are all about AI, the first genuinely 21st-century design technique that is revolutionising architectural culture.

This issue of 2 navigates the murky waters of this rapidly evolving field. Every week, new computer-science papers emerge that are proving valuable, interesting and informative for potential applications of AI in architecture. In computer science, AI is defined as the study and development of intelligent agents which include any device that perceives its environment and takes actions to maximise its chance of achieving its goals. In general, the term is applied when a machine mimics the cognitive functions associated with human beings such as learning and problem solving. In architecture, this line of inquiry is preoccupied with two main schools of thinking. The

Stanislas Chailou,  
ArchiGAN,  
MArch thesis,  
Harvard Graduate School of Design (GSD),  
Cambridge, Massachusetts,  
2019

By developing ArchiGAN, a Pix2Pix version of GANs, Chailou is able to generate stacked plans for an entire building, linking furniture layout to apartment partitions to overall building footprint.

first is optimisation such as possibilities for optimising floorplans, material consumption and construction site time schedules which cover the same problems of disciplinary considerations. At the other end of the spectrum is the inquiry into the problem of designing architecture including creativity, intuition and sensibility, which are hard to translate into code as they elude quantification. The architecture project within this frame of consideration not only tackles the problem from an aesthetic point of view – the idea that AI can quasi-creatively generate a sensibility – but also from a series of profound ethical perspectives. For example, how does that posthumous frame of thinking materialise in the built environment? Do robots dream of perfect cathedrals?

### What is AI?

Until now, the standard definition of AI has been that it seeks to do what human minds can do. But that definition is clearly obsolete. AI can already outperform human beings in many areas. In 1997, Deep Blue beat the then world chess champion Garry Kasparov. In 2016, AlphaGo beat top player Lee Sedol at the extraordinarily complex game of Go, in which there are more potential moves than atoms in the universe. There is no longer any point in competing against AI. Indeed, in 2019 Sedol retired from the game, stating that AI 'is an entity that cannot be defeated.'

In order to understand AI, we need to make a series of distinctions. The first is between AI and human intelligence. Despite what the movies portray, AI does not possess consciousness – at least for now. It might beat us at Go, but it does not even know that it is playing Go. AI has no more capacity to think or understand than our pocket calculators.

The generic term AI is hopelessly broad. Coined back in 1956, it is still used today. Yet to compare the first primitive version with the latest version – deep learning – would be like comparing a Model T Ford with the latest Tesla. The crucial difference is that early versions of AI were programmed, whereas more recent versions of AI can learn and improve over time. These learning systems fall within the category of machine learning. Deep learning – the most advanced learning system – is a category within machine learning itself, a category within AI. Imagine them as being

