

COMPLEX PROJECTS

AR0122: 1:1 INTERACTIVE ARCHITECTURE PROTOTYPES



Source: IA prototype @RB lab exhibited @TS gallery in Sydney

Tutors

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Code	AR0122
Credits	5 ECTS
Location	TBD
Excursion	-
Costs	-

The Interactive Architecture Prototypes (IAPs) workshop focuses on skill building in Data-driven Artificial Intelligence (AI) supported Design-to-Robotic-Production and -Operation (D2RP&O) methods for the development of architectural hybrid assemblies ranging from micro levels, as material systems, to meso and macro levels as building components and buildings.

In this context, hybrid assemblies will be explored by designing and robotically producing and/ or operating a structure that consists of various components assembled into an integrated whole. The structure is an urban insert of relatively small size and will be designed by taking into consideration requirements for function/ use, form, structure, and environment as follows:

- (1) Functional requirements are addressed by mapping activities 24/7;
- (2) Formal aspects are explored by taking into consideration material, structural, and environmental requirements as well as principles of customization, continuous variation, and componential re-/ combination;
- (3) Environmental requirements are considered from a distributed smart

(passive-active) control perspective.

Principles of variation involve conditions and characteristics that relate to performative aspects (informed by functional, structural, and/ or environmental needs) and may be customized according to individual i.e., personal specifications. For that a detailed mapping of 24/7 needs is necessary in order to understand their nature and variation.

Main consideration is that IAPs are composed of various components that are together establishing a hybrid system, which is in part or completely computationally and robotically processed and operated. Materials considered are bio-/ polymers and/ or recycled material systems with integrated sensor-actuators that facilitate sensorial and spatial interaction. These are supported by Computer Vision (CV) and AI methods and rely on virtual and/ or physical prototyping implemented in the Robotic Building (RB) and AiDAPT labs.