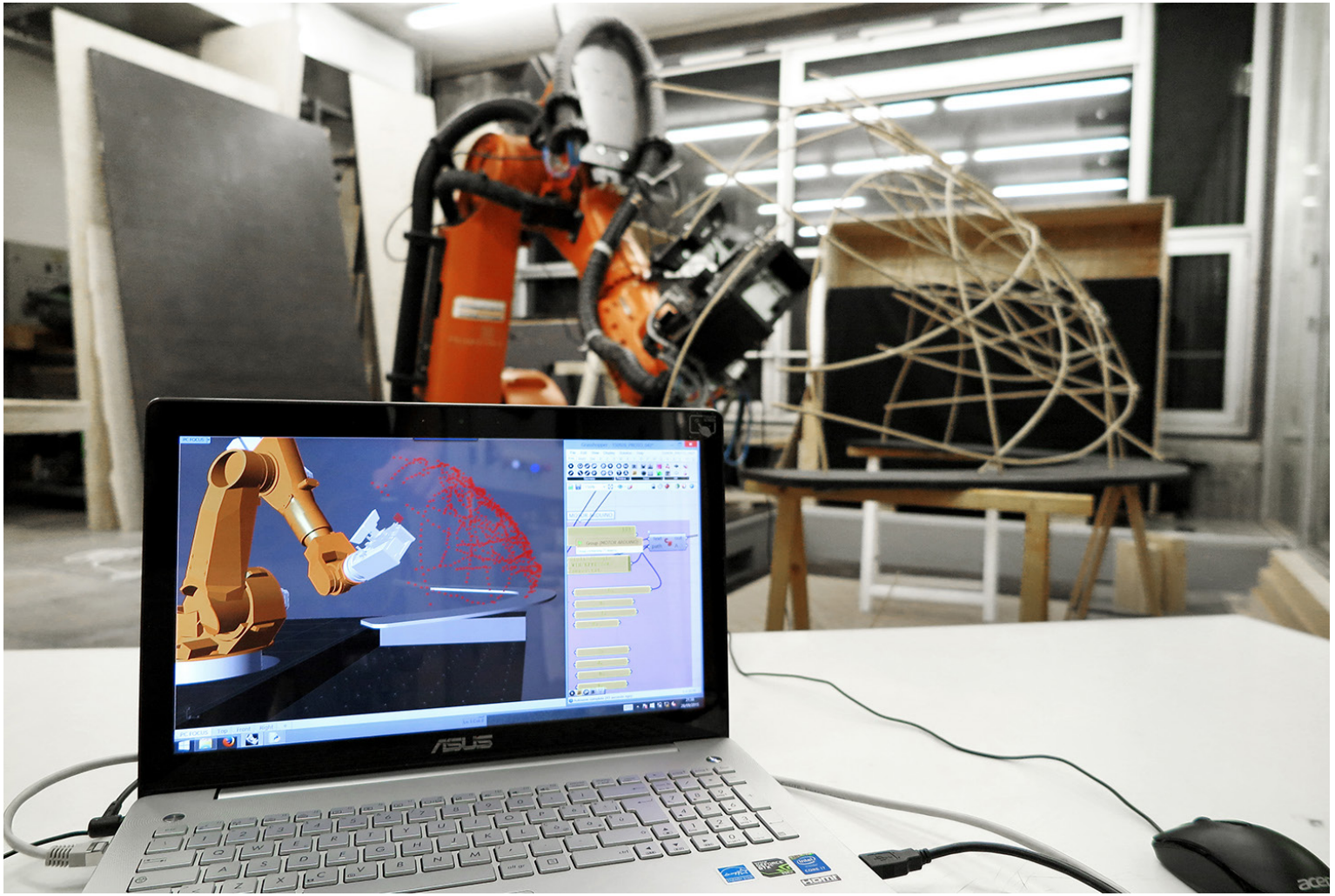
Studio Architecture III is happy to invite you to the lecture by M.Sc. Giulio Brugnaro

Robotic Softness

The lecture is scheduled for 14th of April, Thursday, at 18:00, room 106c.

Giulio Brugnaro is a trained architect with a strong interest in computational tools and robotic fabrication for architectural production. He is currently Early-stage Researcher (ESR) at The Bartlett School of Architecture in London as part of the InnoChain Research Network. His research focuses on exploring adaptive robotic fabrication processes and sensing methods that allow designers to engage with the qualitative properties of heterogeneous materials. Giulio's interest in the use of technology within creative practices led him to work through different disciplinary fields and merge them together to reach innovative and unexpected results.

Previously he received a B.Arch. in "Architectural Sciences" at IUAV University of Venice and a M.Sc. in "Integrative Technologies and Architectural Design Research" (ITECH) at the University of Stuttgart.



Robotic Softness

Aim of the project was exploring the potential of behavioural fabrication strategies in comparison with construction processes based on pure notation, where only what can be drawn and measured, can be built.
The term “Robotic Softness” refers to the idea of conceiving robotic fabrication methods as “soft systems”, intended as flexible, adaptable and evolving frameworks where the moment of design unfolds together with the fabrication one, constantly being informed by real-time sensor data.

In order to challenge this theoretical framework, the research focused on the design and robotic production of three-dimensional woven structures inspired by the behavioural fabrication logic used by the weaverbird during the construction of its nest. These structures are not successful for specific properties of the material they are made of, but rather for the procedural logic that the bird follows to put them together. Therefore, the biomimetic research focused on the analysis of these set of behaviours and strategies and their abstraction in a robotic fabrication context.

The research development led to the design of an integrative computational tool, composed by different components such as an online agent-based control system, a custom weaving end-effector and a coordinated sensing strategy based on 3D scanning procedures. The final outcome of the behavioural fabrication process could not be predetermined in a blueprint drawing or digital model but it rather emerges out of the negotiation between different fabrication constraints, defined performance criteria, material behaviours and specific site conditions.

