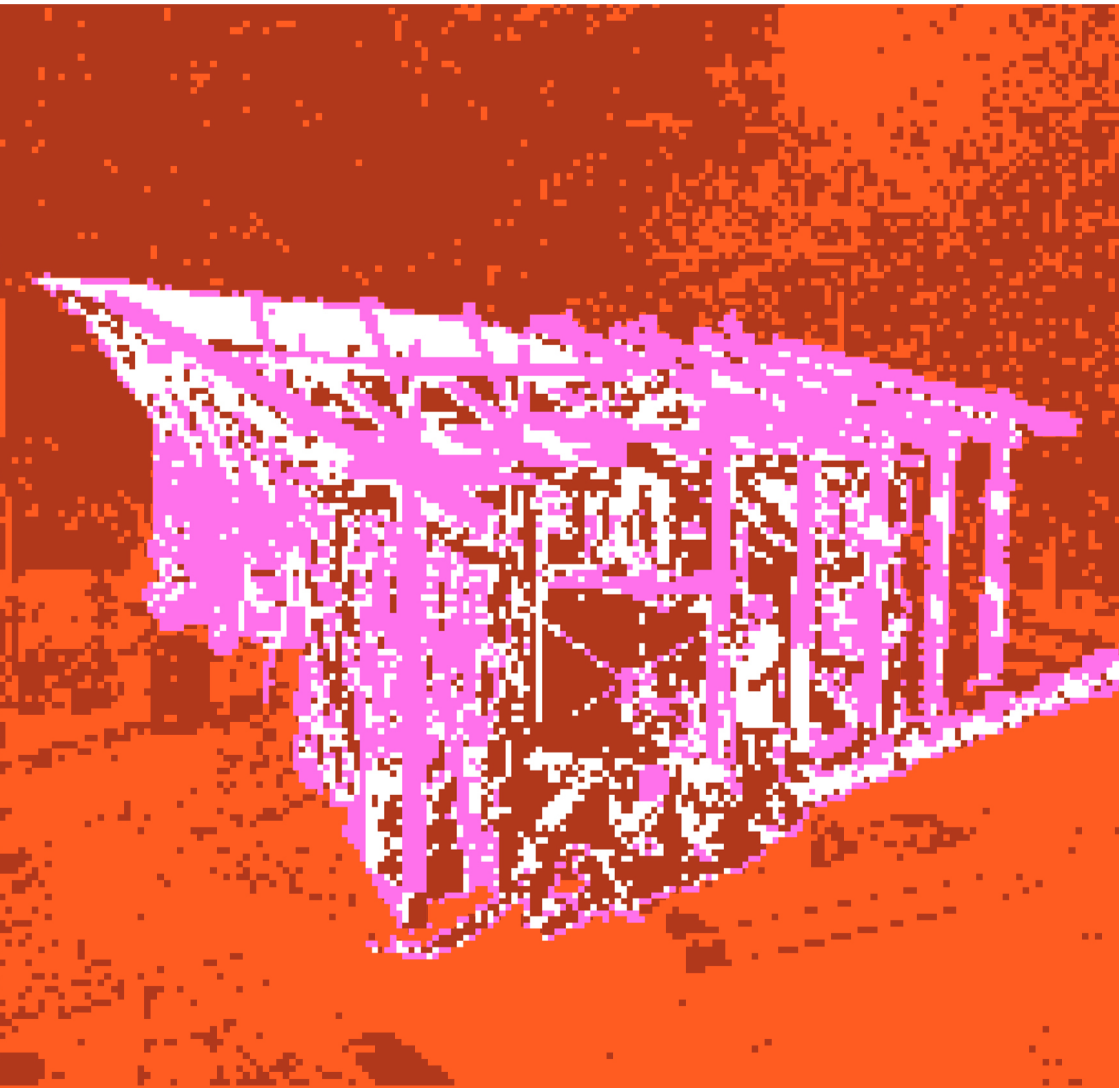
Postgraduate in 3D Printing Architecture

Directed by
Alexandre Dubor &
Edouard Cabay

Iaac Advanced Architecture Barcelona



Postgraduate program in 3D Printing Architecture

iaac.net
blog.iaac.net

Iaac Advanced Architecture Barcelona

3DPA

What?

3D Printing Architecture is set to change the way we design and build our habitat. 3DPA is a postgraduate program training architects and engineers to design and make a new architecture based on 3Dprinting.

Through a research based design using natural materials, additive manufacturing, parametric modelling, and prototyping at scale 1:1, 3DPA students are not only learning but also pushing the boundaries of the discipline, providing a more sustainable future for our habitat and building industry.

Who?

Can we 3D print houses? Can these houses be fully recyclable, 0km, low energy consumption, adaptable to local contexts and empower local communities? What will this new architecture look like and how will we live in it? These are some of the questions that drive IAAC's program 3DPA: 3D Printing Architecture, where students can develop new skills and a new career thanks to the collaboration of over 30 researchers and experts in bioclimatic architecture, material science, structural engineering, energy efficiency, computational design, robotics, social innovation and bio-construction, envisioning together the future habitat of our society and building it in the present.

Why?

Can we 3D print houses? Can these houses be fully recyclable, 0km, low energy consumption, adaptable to local contexts and empower local communities? What will this new architecture look like and how will we live in it? These are some of the questions that drive IAAC's program 3DPA: 3D Printing Architecture, where students can develop new skills and a new career thanks to the collaboration of over 30 researchers and experts in bioclimatic architecture, material science, structural engineering, energy efficiency, computational design, robotics, social innovation and bio-construction, envisioning together the future habitat of our society and building it in the present.

Professional Opportunities

This intense 6 months program on 3d printing proposes a steep learning curve into all aspects of this construction technology: design with its potential and limitations, to master the computational design tools, to understand and research materials and their sustainable value, to engage and use with robotic technologies. This range of skills as well as the knowledge of a new design methodology is increasingly demanded by architectural and engineering studio, construction company as well as in state of the art research center worldwide.

Alumni

We are proud of our 3DPA alumni that work in world renown offices, started academic careers of excellence, or have started their own successful business, together proposing a better architecture and construction industry.

This programme offers the following different formats:

Postgraduate in 3D Printing Architecture

3DPA

Degree Postgraduate Diploma in 3D Printing Architecture School of Professional and Executive Development at the Polytechnic University of Catalonia – European Higher Education Area (EHEA)

Credits
45 ECTS

Language
English

Modality
In-person

Duration
September 2024 to February 2025 **6 Months**

Study mode
Full time

Admission
Students with master degree in related field will be considered first

Master in Advanced Architecture + Postgraduate in 3D Printing Architecture

MAA + 3DPA

Master in Advanced Architecture and Degree Postgraduate Diploma in 3D Printing Architecture accredited by School of Professional and Executive Development at the Polytechnic University of Catalonia – European Higher Education Area (EHEA)

Credits
90 ECTS + 45 ECTS

Language
English

Modality
In-person

Duration
From October 2024 to June 2026 / 15 Months

Study mode
Full time

Admission
Admission based on student profile evaluation.

Master in Robotics and Advanced Constructions + Postgraduate in 3D Printing architecture

MRAC + 3DPA

Master in Robotics and Advanced Construction, and Degree Postgraduate Diploma in 3D Printing Architecture accredited by School of Professional and Executive Development at the Polytechnic University of Catalonia – European Higher Education Area (EHEA)

Credits
90 ECTS + 45 ECTS

Language
English

Modality
In-person

Duration
From October 2024 to June 2026 / 15 Months

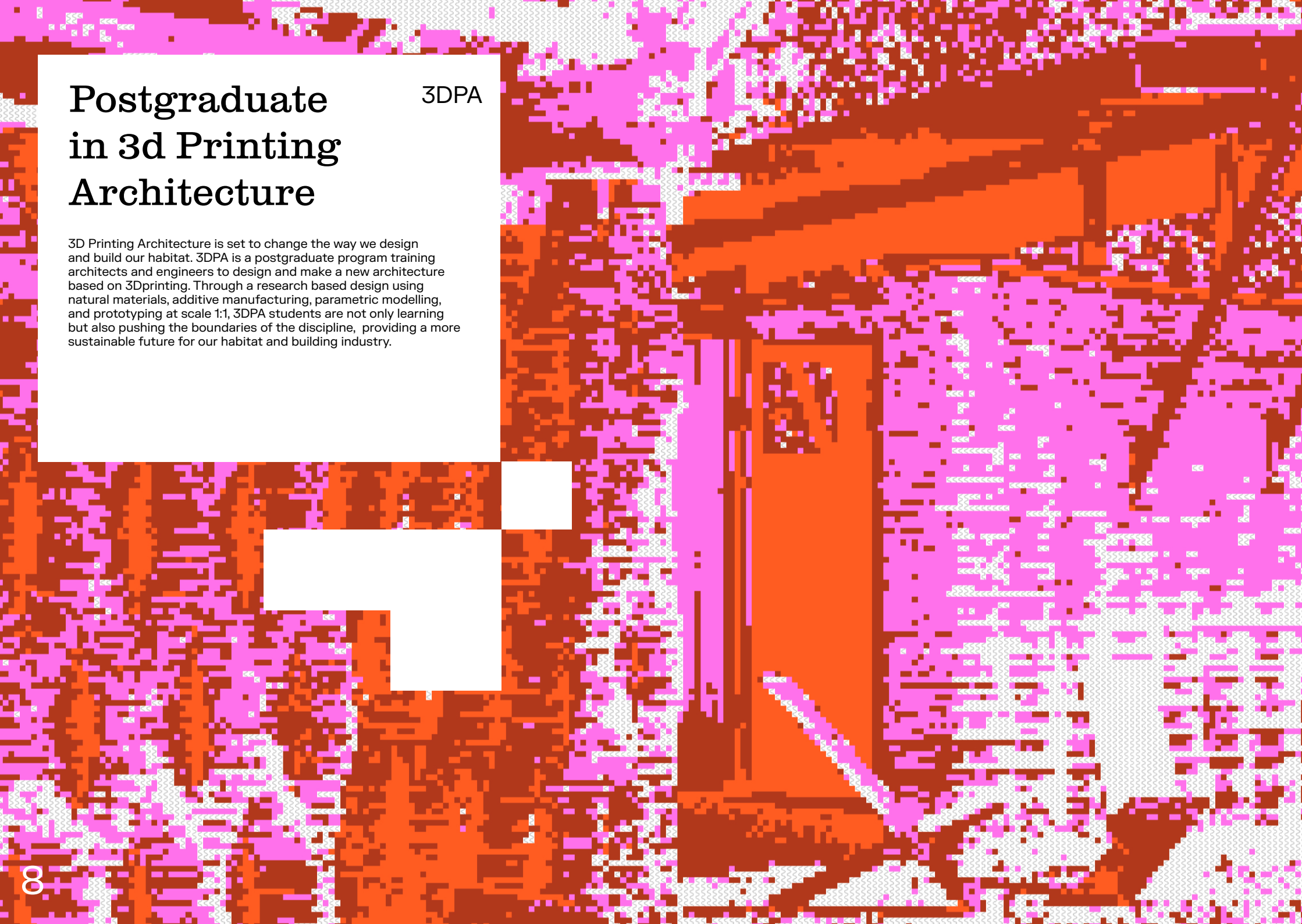
Study mode
Full time

Admission
Admission based on student profile evaluation.

Postgraduate in 3d Printing Architecture

3DPA

3D Printing Architecture is set to change the way we design and build our habitat. 3DPA is a postgraduate program training architects and engineers to design and make a new architecture based on 3Dprinting. Through a research based design using natural materials, additive manufacturing, parametric modelling, and prototyping at scale 1:1, 3DPA students are not only learning but also pushing the boundaries of the discipline, providing a more sustainable future for our habitat and building industry.



Academic Structure

01 First phase
September - October

Learn

TECHNE – Craftsmanship and Technology
An experimental and hands-on approach to Additive Manufacturing with robots. Eco-friendly material printing resides in the control of robotic technology and the mastering of its complex materiality.
This 6 weeks long phase emphasises on the development of knowledge at the intersection of craftsmanship and technology in the topics of matter, machine, structure and the built environment through detail, fragments and architecture. This phase sees the students work in small groups in short intense exercises and experiments.

Techne 1 to 6

Valldaura Campus

Accommodation Included in tuition

Matter	Machine	Structure	Detail	Fragments	Architecture
Techne 1	Techne 2	Techne 3	Techne 4	Techne 5	Techne 6

02 Second phase
October - December

Explore

RESEARCH STUDIO – Building Performance
Research refers to the systematic method consisting of enunciating a problem, formulating a hypothesis, collecting facts and data, analysing the facts and reaching certain conclusions either in the form of solution(s) towards the concerned problem, or in certain generalisations for a theoretical formulation. The second phase is an 8 weeks exploratory studio through Research in building performance on the topics of Geometry, Rigidity, Fibre reinforcements, optimizations and supports*.

MATTER RESEARCH- Mechanical Performance
Assessment for Material-Based Stabilization of Earth for 3D Printing In addition to evaluation of mechanical performance of earth for 3D printing through material-based stabilization methods, this workshop also investigates the mechanical performance of geopolymer composites. By focusing on enhancing capillary suction time, water retention capacity and compressive strength, the optimal composition of geopolymer mix will be developed. With the parallel experimentation steps of the geopolymer and earth composite generations, a series of mechanical test results will be anaylzed and compared.
*Areas of Research are subject to change from one year to another.

Main campus + Research/field trip

Optional research trip

Research Studio	Vision	Matter Research
Developing new solutions Research Computation Research Drawing setup	Developing new architecture	Mechanical performance Assessement for material-based Stabilization of earth for 3D printing

03 Third phase
December- February

Demonstrate

PROJECT STUDIO – Architectural Vision and Construction
3D printing, a digital technology, challenges a conventional design approach and requires the elaboration of new strategies partially based on the use of computation. We develop a performance-based approach to design for 3D printed architectural solutions. Within the realms of a design project for a complex humanitarian situation, the design of buildings is the result of a complex negotiation between fulfilling climatic, structural, manufacturing and habitation purposes.

The third phase starts with a collective design competition in which the group capitalises on all the learning of phase 2 in order to develop a design proposal for a 1:1 prototype as a building fragment. The third phase concludes with the group engaging with the construction of a large prototype at 1:1 architectural scale. In parallel, the group will build an architectural design Vision, while documenting and compiling the research into a collective thesis printed document.

Main campus + On-site construction

Protyping design	Prototype construction				
	Techne + Construction prototypes (Scale 1:1) covered by IAAC			Research + Competition + Vision (Scale 1:0) covered by students	
Design to production	Large scale	Construction planning	Pre-production	On-site construction	Final inauguration

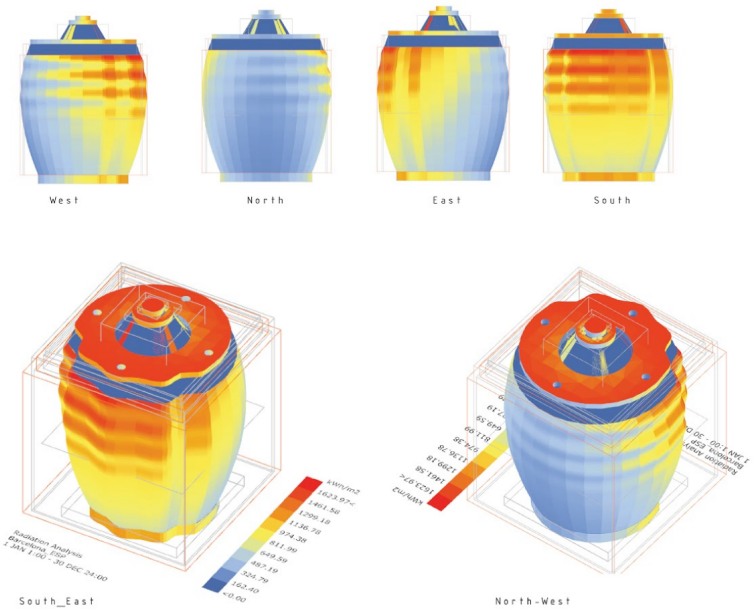
Vision

Developing new architecture

NOTE: The above presented programme is specific to 3DPA 2024-25

Term I

Techne

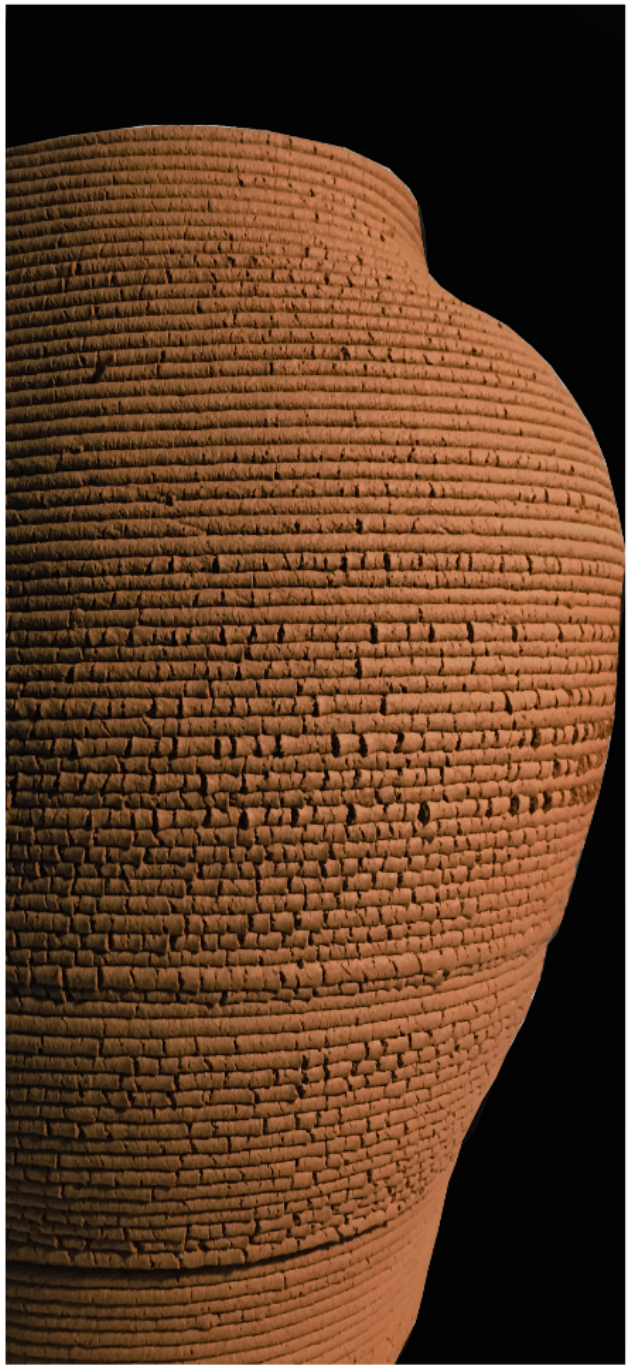


Craftsmanship & Technology

Faculty

Alexandre Dubor, Edouard Cabay, Oriol Carrasco,

Techne offers a experimental and hands-on approach to Additive Manufacturing with robots. Eco-friendly material printing resides in the control of robotic technology and the mastering of it's complex materiality. Through a series of intensive workshops specific questions related to structure or climatic performance are addressed through rapid back and forth between 3d modelling, printing and analysis of the solutions.



Terms I, II & III

Research studio

Research studio

Building performance

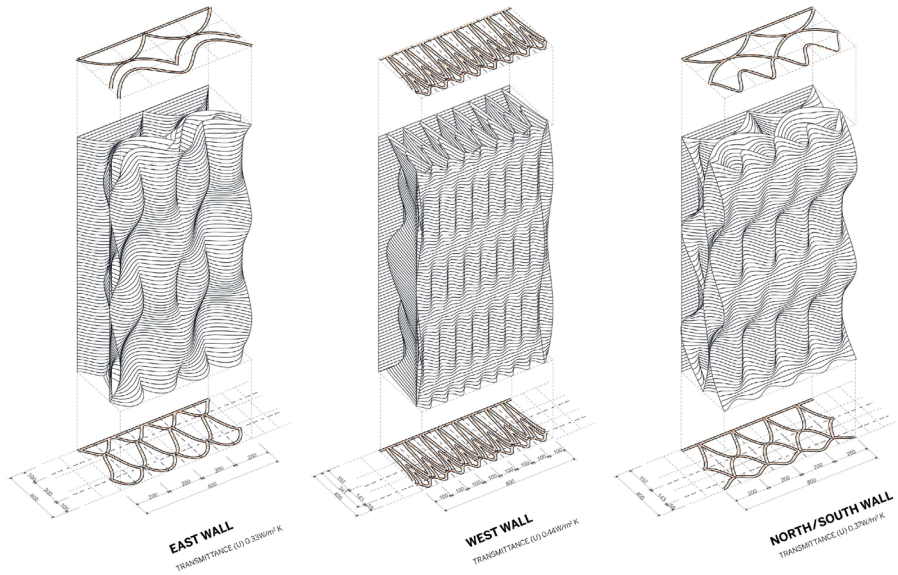
Faculty
Oriol Carrasco,
Alexandre Dubor,
Edouard Cabay, Nestor

With its promise of free-form fabrication, Additive Manufacturing challenges traditional construction methods, their phases and timelines. Architectural elements created with these technologies can be now understood as parts of single holistic designs. Planning and design, fabrication, construction and assembly can now be controlled by a single agent that can have a general vision and overview. Thanks to the intelligence that the designer can embed in the design, it's now possible to comply with most of the requirements that architecture demands. Now the challenges of enclosing a space, climatic control, and structural properties can now be solved within a single well-designed unit.

Architectural vision & construction

Faculty
Alexandre Dubor,
Edouard Cabay

3D printing, a digital technology, challenges conventional design approaches calling for the elaboration of new strategies, partially based on the use of computation. The Studio focuses on developing a performance-based approach towards design for 3D printed architectural solutions. In the context of a design project for a site-specific humanitarian situation, the design of buildings is the result of a complex negotiations between fulfilling climatic, structural, manufacturing and habitation purposes.



WALL CATALOGUE

Faculty

Edouard Cabay
Co-Director

Edouard Cabay is an architect based in Barcelona where he runs his firm Appareil and research project Machinic Protocols developing projects that relate design strategies with new technologies. He has been faculty and research director at IAAC since 2011 where he currently directs 3dPA/OTF, an earth 3d printing program that develops novel 1:1 building solutions for housing purposes.

Alexandre Dubor
Co-Director

Alexandre Dubor is an architect and researcher combining new technologies in an attempt to improve how we build and live in our cities. Trained as architect and engineer (March. at ENSAVT / ENPC, March. at IAAC), he has experience in architectural offices (Studio Libeskind, Atenastudio, iDonati, AREP and Appareil), software development (C277), research and teaching (UTS, IAAC). Since 2012, he has been working at IAAC where he now lead the AAG fabrication team, direct the postgraduate in 3D Printing Architecture (3DPA) and the Master in Robotics and Advanced Construction (MRAC)

Dr. Mathilde Marengo
Head of Studies

Valeria Carrion
Coordinator

Seminar Faculty

Nestor Beguin
3DPA Computation Expert

Oriol Carrasco
3DPAFabrication Expert

Secil Afsar
3DPA Fabrication Assistant

Elisabetta Carnavale
3DPA Material Expert

Amanda Rivera
Material Expert

Alicia Huguet
Structure Expert

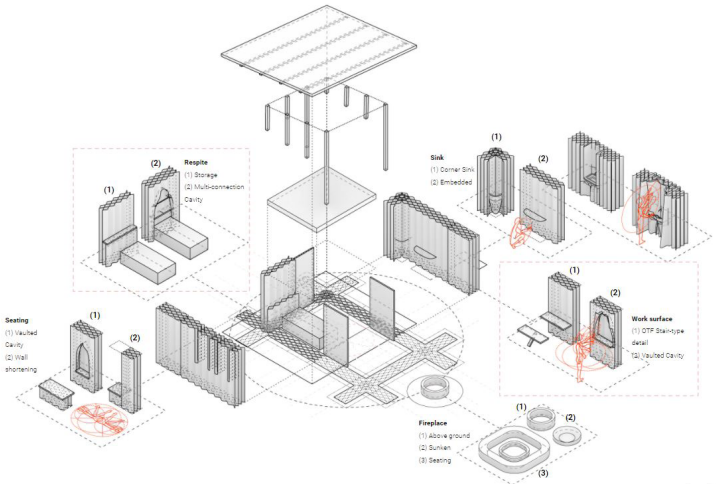
Xavi Aguilo
Energy Expert

Marti Riera
3DPA Structural Expert

Josep Alcover
Sustainability Expert

Previous Projects

3DPA



Tova

3DPA 2021 – 2022

TOVA is the first architectural construction in Spain located in the facilities of Valldaura Labs, Barcelona, built with a Crane WASP, the architectural 3D printer. The construction can be completed within weeks using 100% local materials and local labor, zero waste and a close to virtually zero carbon emission footprint. This manufacturing system can be used anywhere in the world and can help to housing emergencies. The project has been developed by the team of students and researchers from the 3D Printing Architecture (3dPA) postgraduate program of the Institute for Advanced Architecture of Catalonia (IAAC).

3DPA Research Credits:
TOVA is a project of the Institute of Advanced Architecture of Catalonia (IAAC) in collaboration with WASP, developed within the program 3DPA 3D Printing Architecture 2021-2022 for Living Prototype, a BBSR / Zunkunftbau funded project.
Researchers: Adel Alatassi, Aslinur Taskin, Charles Musyoki, Deena El-Mahdy, Eugene Marais, Hendrik Benz, Juliana Rodriguez Torres, Leonardo Bin, Mariam Arwa, Al-Hachami, Marwa Abdelrahim, Mehdi Harrak, Michelle Bezik, Michelle Antonietta Isoldi Campinho, Mouad Laalou, Nareh, Khaloian Sarnaghi, Nawaal Saksouk, Orestis Pavlidis and Seni Boni Dara.
IAAC Team: Edouard Cabay, Alexandre Dubor, Lili Tayefi, Vincent Huyghe, Ashkan Foroughi, Eduardo Chamorro Martin, Elisabetta Carnevale, Guillem Baraut, Gloria Font basté, Nikol Kirova, Francesco Polvi, Bruno Ganem Coutinho, Marielena Papandreou and David Skaroupka.
Project Partners: Colette, WASP, UN-Habitat, BAC Engineering, LaSalle, SmartCitizen, Scuares and Living Prototypes Research Innovation
Acknowledgements: Areti Markopoulou, Mathilde Marengo, Ricardo Mayor, Shyam Zonca, Pilar Xiquez, Ariannet Arias, Gabriel Frederick, Nicolas Rodriguez, Daniela Figueroa Claros, Laura Ruggeri, Xavier Molons, Jorge Ramirez, Jordi Guizán Bedoya, Massimo Visiona, Lapo Naldoni, Massimo Moretti and Francesca Moretti.

3DPA participates in the Living Prototypes collaborative project and is supported by the Federal Research Institute for Construction, Urban Affairs and Spatial Development of the Ministry of the Interior, Construction and Community with funding from the Zukunft Bau research innovation program.

Architecture of Continuity

3DPA 2019 – 2020

The 2019 Open Thesis Fabrication (3DPA) research aims at achieving a sustainable and structurally stable construction system using km-0 robotic additive manufacturing. Building Architecture Continuity employs continuous printing and cantilever geometries to enhance the structural capacities and spatial qualities of its expected results. The tools employed in the project consist of a combination of computational methods, robotic manufacturing, custom made material solutions and performance-based design.
During the six-month exploration, the research has produced several scaled models and a final construction of a complex design, printed in different scales and materials. The design process of the final prototypes followed a path from abstraction to specificity. Based on the structural research conducted before the finalisation of this step, seven modules of various qualities were produced. These modules acted as the connecting pieces between the abstract design and the technicalities of the new technology. They were combined, manipulated, twisted and deformed in order to create spatial solutions in the form of a series of rooms and single architectural elements, such as stairs, openings and columns.

3DPA Research Credits:
This project is a research of the Institute for Advanced Architecture of Catalonia (IAAC), developed within the Open Thesis Fabrication (3DPA) program 2018-19, in collaboration with WASP, UN-Habitat, Windmill, La Salle and Rice House.
Researchers: Ozgur Cengiz, Yuchen Chen, Ipsita Datta, Yingxin Du, Ashkan Foroughi, Pavlina Kriki, Yi Fan Liao, Bhakti Vinod Loonawat, Shahram C. Randeria, Payam Salehi Nejad, Nusrat Tabassum
Faculty: Alexandre Dubor, Edouard Cabay, Joaquim Melchor, Kunaljit Chadha
Faculty assistant: Eugenio Bettucchi, Sheikh Riaz, Armin Akbari, Ya-Chieh Chang
Collaborators: Lapo Naldoni, Alberto Chiusoli, Massimo Visonà and Francesco De Fabritiis (WASP), Josep Ramon Sole and Joal Juanpere (Windmill), Runze Wang (Un-Habitat), Nadia Soledad and Gloria Font (LaSalle)

Digital Adobe

3DPA 2017 – 2018

The final prototype of the 2017-2018 3DPA program is a 2-metre wide and 5-metre high printed clay wall with a varying thickness (0.7m at its bottom and 0.2m at its top) facing the south. At a height of 2.6m, a wooden slab rests on the wall, as to simulate a clay/wood building unit, where the connections between two materials and the vertical load from horizontal slab can be tested. It is a self-standing structure in which the thickness of the wall and the geometry of its 6 layers are designed to match the structural necessities. The wall is designed according to the local climate, taking into consideration the solar incidence, the yearly temperatures and the humidity.

Two aspects, climatic and structural performances, are again the main focuses of the this 1:1 prototype. With the long established understanding of clay's thermal properties to moderate heat transmission, the team has sought for a design to even enhance such properties. A ventilated wall design enabled through operable top/bottom openings is then created to either reduce heat gain in summer time through convection between top and bottom openings, or to retain heat in the winter as both openings are closed.

Its external geometry consists of surface of bumps of which the calibrated geometry creates a self shading pattern, optimising cooling in summer and heat absorption in winter, taking into consideration of the solar radiation angles of the locale, which in this case is Barcelona. The other crucial aspect being factored into the bump design is the printability, where the design is confined to cantilevered angles of less than 30 degrees as a result of its materiality and printing technology currently available.
These climatic objectives are then incorporated on the prototype in the way where the west-ward would have have higher heat gain, while the east-ward would have lower heat gain at a given time. That is, a greater amount of thermal mass and less ventilation on the west-ward wall, and a lesser amount of thermal mass and more ventilation on the east-ward, through which a comparison of performances driven by variations on design parameters can be made and observed with the help of embedded temperature and humidity sensors.
The prototype is designed to be self-standing, and thus both the wall's self weight and the load capacity of the wooden slab are taken into account for the design of the global geometry with regard to the thickness of the wall as well as the connection of where the wooden beams meet the wall.
The geometry of the connection unit where the beams rest on the wall comes in a protruding platform at the height of 2.6m, which gradually receding into the wall as it reaches the bottom. This allows for a more distributed vertical load to go onto the contact brick and thus an increased level of the wall stiffness to hold the beams in place.

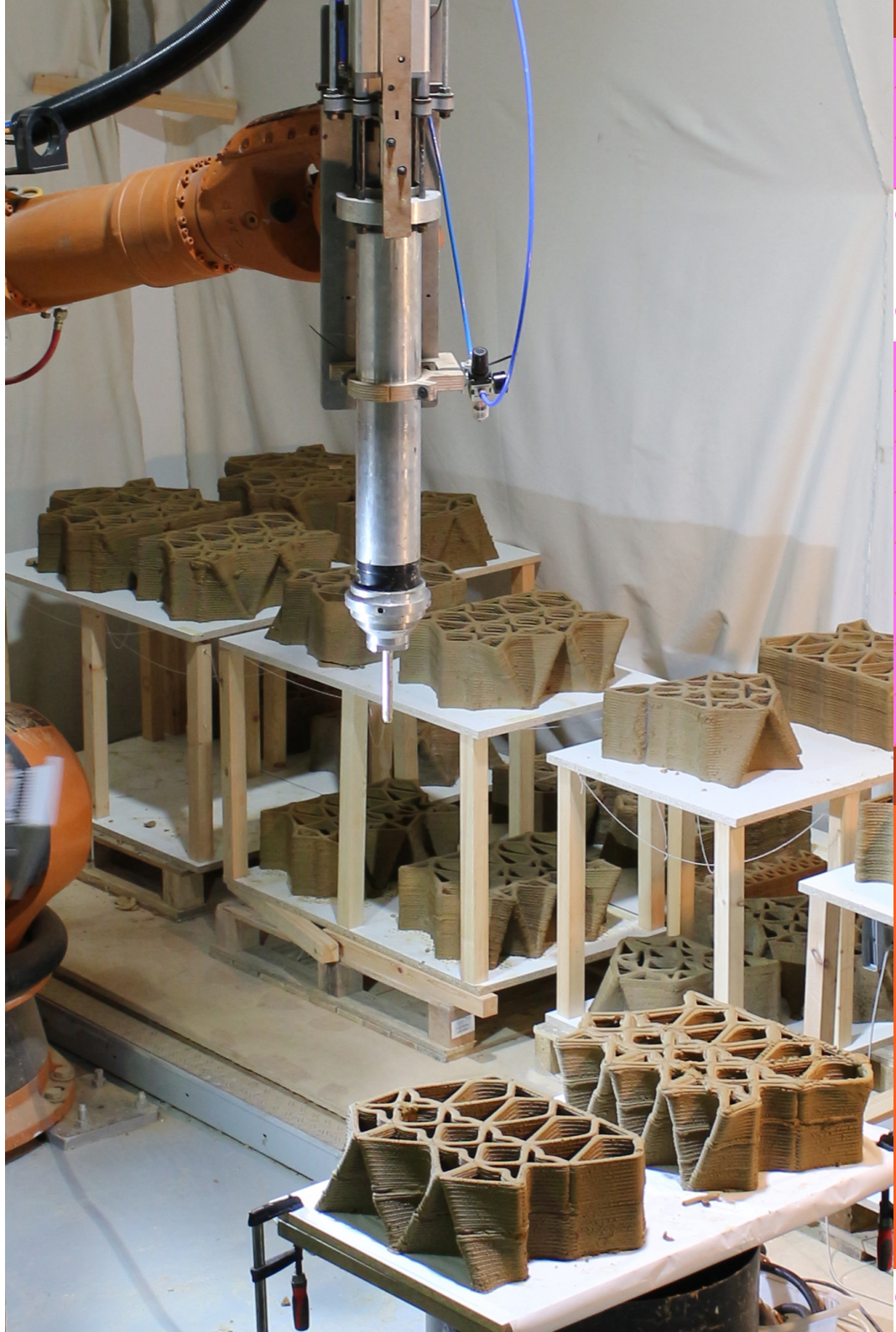
Project Credits
Faculty: Alexandre Dubor, Edouard Cabay, Mathilde Marengo, Kunaljit Chadha, Sebastian Moreno.
Students: Ya-Chieh Chang, Daniele Fiore, Filipp Sevostianov, Gelder van Limburg Stirum, Quan li,Sheikh Rizvi Riaz, Dongliang Ye.
Collaborators: Windmill, La Salle, Nanosystems, ArtCon and SmartCitizen

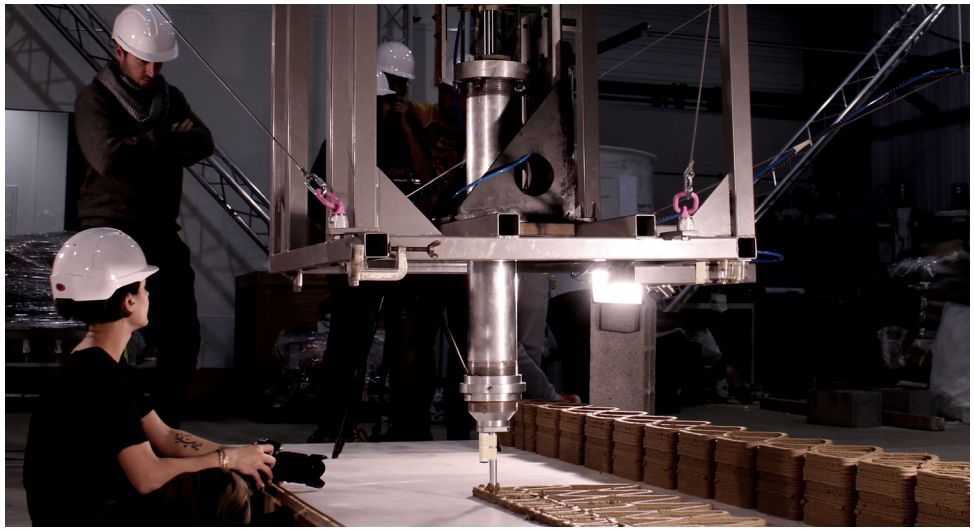
Terraperforma

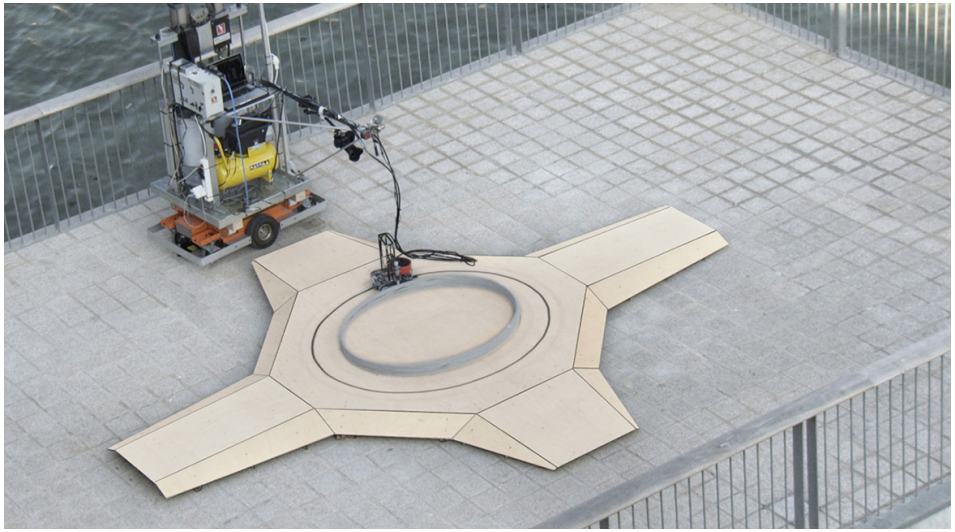
3DPA 2016 – 2017

The final prototype of the 2016-2017 3DPA program was realized with a modular approach The modules are parametrically conceived so that they have optimum performance depending on solar radiation, wind behavior and structural 3D printing reasoning, both by their own and as a whole design. The façade was conceived as a gradient in both horizontal and vertical directions, having various radiuses of self-shading, in order to optimize east and west sun.
Additionally, the modules are designed to incorporate various types of openings, in order to maximize the natural daylight potential – the openings are strategically placed and vary from micro openings to full openings between bricks are light channels.The same channels are also designed to aid wind behavior through convection properties, as well as the placement of the microperforation which would direct air flow.

Project credits
Program Directors: Edouard Cabay, Alexandre Dubor,
Research Advisors: Areti Markopoulou, Angelos Chronis, Sofoklis Giannakopoulos, Manja Van De Warp, Mathilde Marengo, Grégoire Durrens, Djordje Stanojevic, Rodrigo Aguirre, Kunaljit Singh Chadha, Ji Won Jun, Ángel Muñoz, Wilfredo Carazas Aedo, Josep Perelló, Pierre-Elie Herve, Jean-Baptiste Izard, Jonathan Minchin.
Researchers: Sameera Chukkappali, Iason Giraud, Abdullah Ibrahim, Raaghav Chentur Naagendran, Lidia Ratoi, Lili Tayefi ,Tanuj Thomas







On site robotics

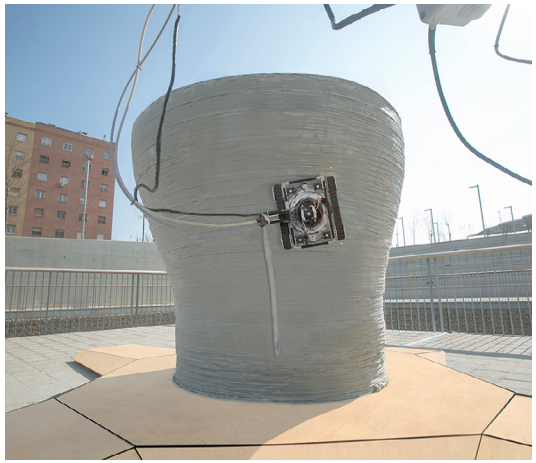
In collaboration with tecnalia Corporación Tecnológica

A collaborative project between IAAC and TECNALIA, featured in the 2017's edition of Barcelona Building Construmat. **On Site Robotics demonstrates the potentials of additive manufacturing technology and robotics in the production of sustainable low-cost buildings that can be built on site with 100% natural materials.**

Combining technological advances in robotics (cable robot), natural materials and CAD/CAM software, the aim of the project is to bring **automation to the construction site**, as well as allowing the production of high-performance buildings and their monitoring in real-time during the construction.

The 3D Printing System presented is introduced to 3D print large scale construction parts, and even small scale buildings, made from 100% natural materials. This system includes the cable robot COGIRO with an integrated CNC control, which is able to automate the movement of the 3D extruder with precision.
Thanks to the use of cables operated by servo-controlled winches with easy assembly, maintenance and reconfiguration, the printing can happen in a very wide range of workspaces, and even directly on the construction site.
The system also integrates an extruder and a natural, biodegradable, recyclable and local clay-based extrusion material, based on the Pylos project.

The Construction sector, which has traditionally been slow in integrating technology, is now opening up to digital manufacturing, 3D printing, and robotics.



Minibuilders

Small Robots printing Big structures obotics offer great potential towards innovation within the construction industry. However, in their current implementation applied to the architectural field, in particular, construction robotics, these systems all share a specific limitation: the objects they produce are linked to and constrained proportionally to the size of the machine. This methodology of production and construction is not scalable. In this sense, to create a house, using current construction robotics, the machine needed must have a work envelope as large as the house itself. The project aims to address this particular limitation through the creation of a technology that is both scalable and capable of fabricating structures using tools that are independent of the final products shape of size.The objective was to develop a family of small-scale construction robots, all mobile and capable of constructing objects far larger than the robot itself. Moreover, each of the robots developed was to perform a diverse task, linked to the different phases of construction, finally working together as a family towards the implementation of a single structural outcome. Hence, instead of the implementation of one large machine, a number of much smaller robots were generated, working independently, but in coordination, towards a single goal.

Industry Partners

Are you interesting in collaborating with the 3DPA programme?

Contact us at:
3dpa.coordinator@iaac.net
applications@iaac.net

SOCOTEC Engineering Consultancy Group

BAC is a global engineering consultancy of the SOCOTEC Group that operates in the sectors of civil engineering, building, quality control and geotechnics, and energy and environment. BAC is committed to the future of the planet and we work to reduce the impact on the carbon footprint through a digital transformation strategy, refocusing our work towards the circular economy. The SOCOTEC Group, with a turnover of more than 1,000 million euros, has a workforce of more than 10,000 employees worldwide and a presence in 25 countries.

VERVITECH

VERVICTECH manufactures and markets enzyme-based products, environmentally friendly, for both professional and private uses, aimed at sectors and services as diverse as construction, agriculture, livestock, waste treatment, industrial soil treatment, cleaning and disinfection.

UN Habitat Humanitarian scenarios

The United Nations Human Settlements Programme, UN-HABITAT, is the United Nations agency for human settlements. It is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all.

Colette Student Scholarship

The idea of this project is to develop a learning environment which can be used to teach and learn CT independently from the socio-economic background of the students and schools. Approaches to CT using hardware and modern technology (e.g. robots, 3D-printers) can be very motivating for students. However, there are many practical reasons such as the costs, safety concerns and the availability of the tools to only a small group of students at a time outweighing their possible benefits.
Using the technical possibilities of the digital transformation, we want to provide the students with an opportunity to learn CT without the requirement of buying additional hard- or software. Since nearly all students (91% in upper secondary schools) in Europe possess a smartphone, our approach aims at exploiting the benefits of the so-called Bring-Your-Own-Device-approach in a way that enables teachers to include CT in in their regular lessons.

Smart Citizen Sensor Monitoring

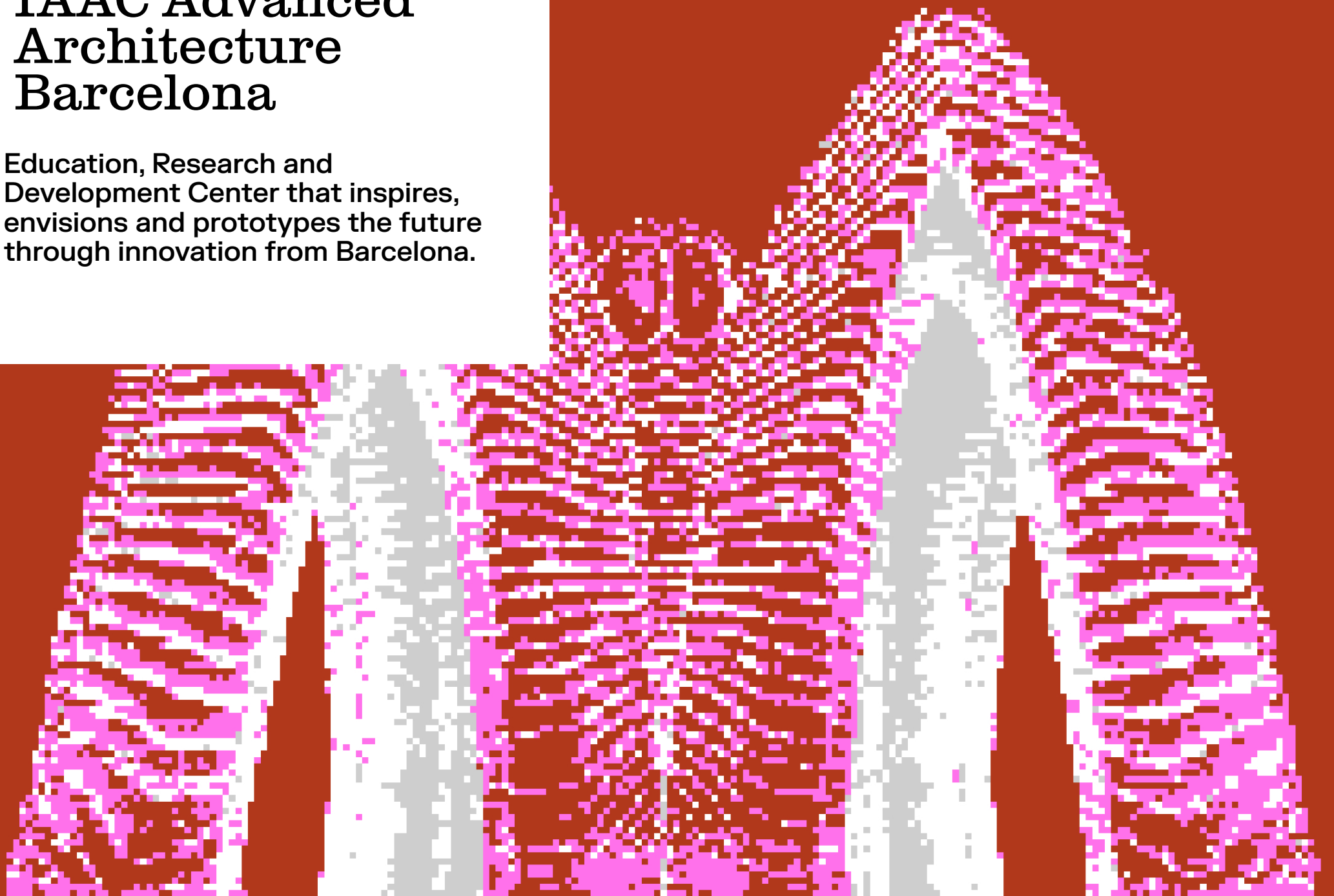
Smart Citizen is a platform for the generation of social participatory processes in urban areas. Connecting data, people and knowledge, the objective of the platform is to serve as a node for building productive and open indicators, and distributed tools, bringing thereafter to the collective construction of the city for and by its own inhabitants.

WASP Large Scale 3D printing

3D printing is WASP's heart since a small and fast printer that materialises objects made of bio-plastic, clay, silicone and biocompatible materials, which mills wood and aluminium, makes it easy to start mini-productions and to create what you need by yourself. The aim of WASP is to build 'zero-mile' homes, using materials found on the surrounding area. A similar project requires that the machine be portable and features low energy consumption, since in large areas of the planet, there is no electricity at all. It must therefore be able to use renewable energies such as sun, wind and water.

IAAC Advanced Architecture Barcelona

Education, Research and Development Center that inspires, envisions and prototypes the future through innovation from Barcelona.

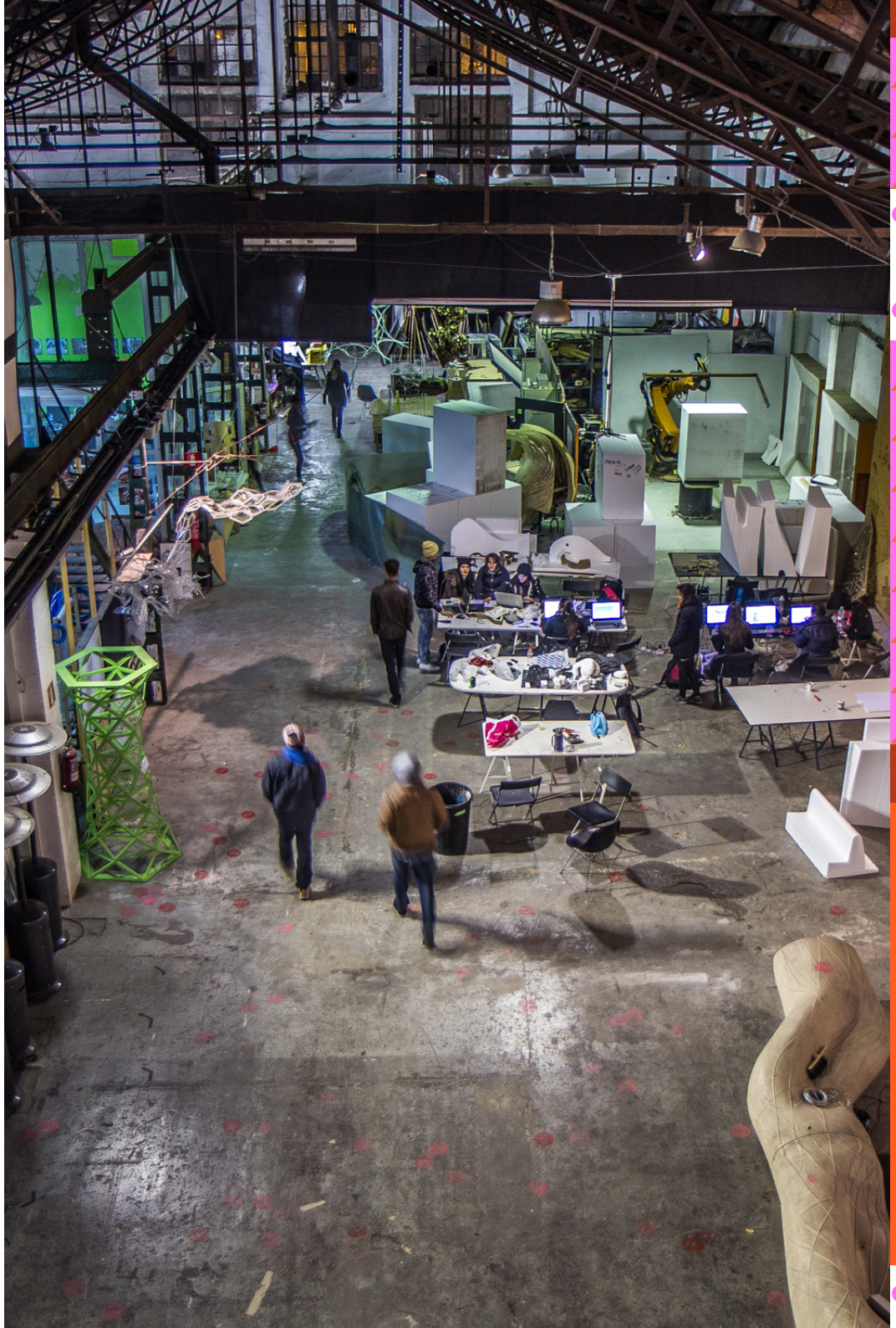


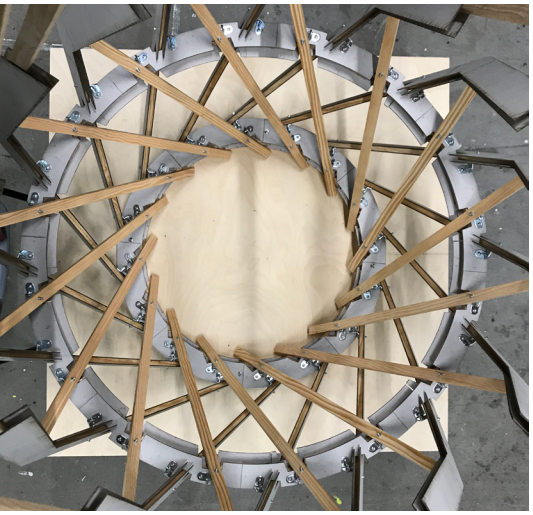
About the Institute

To inspire architects of change to envision, prototype and impact the future.

The Institute for Advanced Architecture of Catalonia (IAAC) is an international centre for research, education, production and outreach, with the mission of envisioning the future habitat of our society and building it in the present.

Based in Barcelona, the Institute offers multidisciplinary programmes that explore international urban and territorial phenomena, with an emphasis on the opportunities that arise from the emergent technologies, and the cultural, economic and social values that architecture can contribute to today's society.





IAAC the Institute for Advanced Architecture of Catalonia

We don’t see the future as a distant horizon awaiting us. We understand the present as a moment to influence what comes next. The future is our daily inspiration, our driving force, and our biggest commitment: our minds live in the cities, the technology and the problems of the future.
We stand at the intersection of imagination and reality, where every prototype holds the potential to shape the next era of habitat. We are architects of change.

Guided by our unwavering conviction that a better built environment is possible, we push the boundaries of today through innovative education, research and development. These are our tools to address today’s problems and achieve the future we pursue for our cities.

“ To change something, build a new model that makes the existing model obsolete”

— R. Buckminster Fuller

Innovation center

We equip “architects of change” with knowledge, skills, tools, networks, and critical thinking to envision, design, and prototype alternative radical and plausible futures. Through immersive learning and educational experiences, practical projects and visionary ideas are brought to life.

In this dynamic, collaborative space, students, researchers, industry experts, communities of practice and academics exchange ideas to find new innovative pathways. Explorations aimed at solving the challenges surrounding how habitat relates to the rest of the factors of the urban environment — individuals, communities, sustainability, etc.

We go beyond being an educational institution. We are an ecosystem of innovative research, conceptualization and materialization of disruptive solutions aimed at building a better future.

IAAC is located in the Poblenou neighbourhood of Barcelona, in the recently created district known as 22@, an international reference for companies and institutions oriented toward the knowledge society. In the 22@, cutting-edge firms, universities, research and training centres are integrated with different agents of promotion that facilitate interaction and communication among them.

The neighbourhood is close to the historic centre and the seafront, and features some of the most iconic landmarks of the city such as the Agbar Tower and the Design Hub building. The ongoing projects of the Plaça de les Glòries and the Sagrera APT station are also making it one of the most dynamic enclaves in the city.

Pujades Campus

IAAC is housed in two old factory buildings, with 4.000 m2 of space for research, production and dissemination of architecture.

The space itself is a declaration of principles, embodying an experimental and productive approach to architecture.

The IAAC Pujades Campus premises include the Fab Lab Barcelona, an architecture and design-oriented digital fabrication laboratory, and a second Fabrication Laboratory, entirely dedicated to the development of IAAC students projects.

Valldaura Campus

Valldaura Labs is IAAC's second campus located in the Collserola Park, the green heart of Barcelona's Metropolitan Area.

The campus is a 140 hectares park and testing ground for innovation, that features the latest technologies in the fields of energy, information and fabrication.
The core of this innovative project developed by IAAC is a series of laboratories that work to set a new benchmark for self-sufficiency.

The Valldaura Labs premises include the Green Fab Lab, a fabrication laboratory oriented towards self-sufficient and productive solutions. The Food Lab and the Energy Lab, allowing students to research the specifics of the production of key elements involved in self-sufficiency.

The Fab Lab Barcelona and Green Fab Lab are also part of the global network of Fab Labs, set up by MIT's Center for Bits and Atoms: small scale production and innovation centres equipped with digital fabrication tools and technologies for the production of objects, prototypes and electronics. Fab Lab's final mission is to provide access to the tools and the knowledge to educate, innovate and invent using technology and digital fabrication. This initiative aims to allow anyone to make (almost) anything, thereby creating opportunities to improve lives and livelihoods around the world.

Fab Lab Barcelona

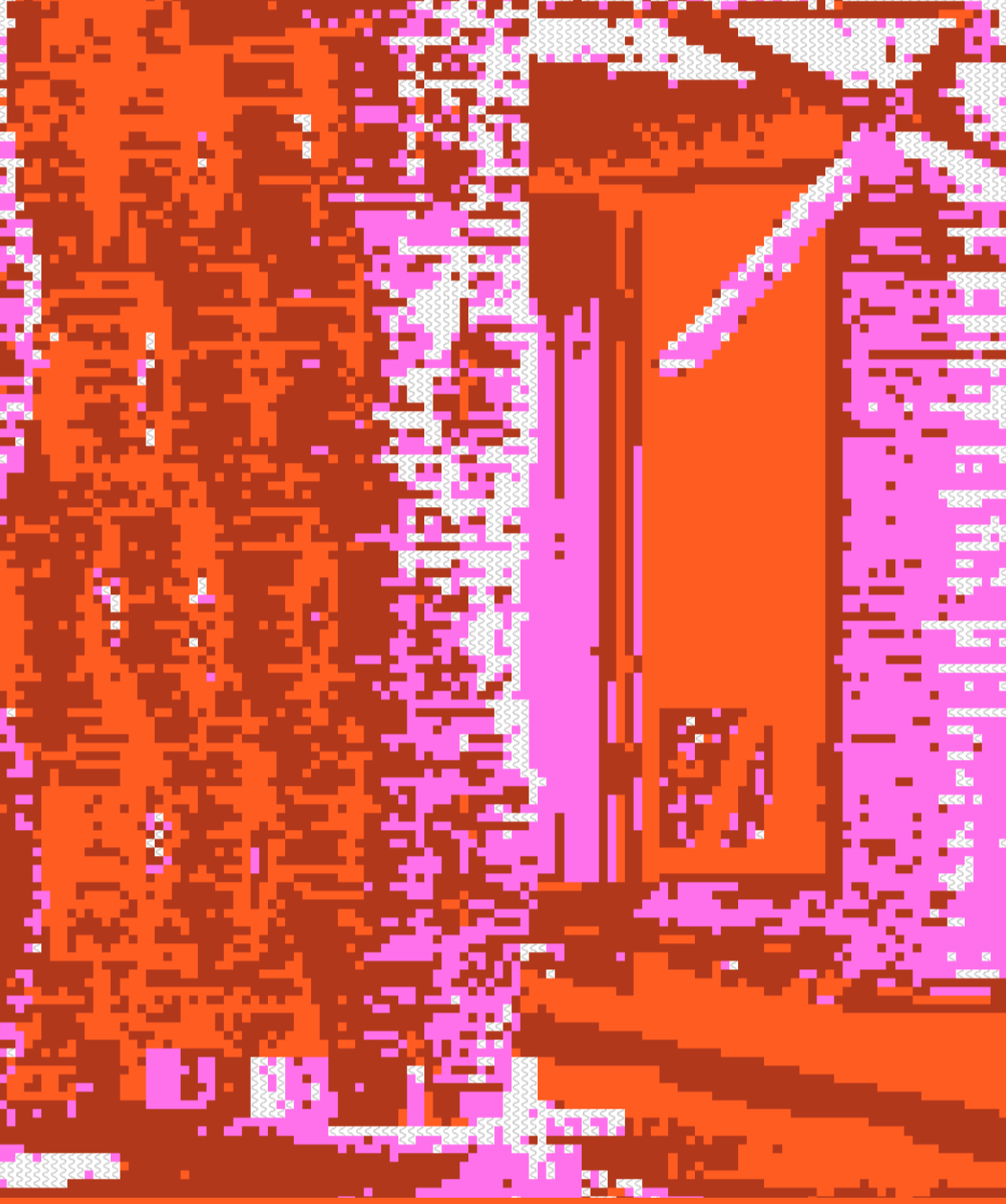
At Pujades campus

Fab Lab Barcelona is the headquarters of the global coordination of the Fab Academy programme, in collaboration with the Fab Foundation and the MIT's Center for Bits and Atoms. Fab Lab Barcelona is located in the Pujades Campus, where it supports different educational and research programmes related to the multiple scales of the human habitat. The Fab Lab Barcelona has produced projects such as Hyperhabitat or the Fab Lab House and is currently developing projects of different scales, from smart devices for data collection by individuals, such as Smart Citizen, to the new production models for cities with the Fab City project being implemented in Barcelona in collaboration with the city council.

Green Fab Lab

At Valldaura Campus

The Green Fab Lab is a digital fabrication lab that uses natural resources, part of the Plan Avanza national network of laboratories in Spain. One of its research lines is centred on the development of new materials from natural ingredients such as wood, earth or minerals for building, to make bricks, glass and resins using simple ancestral technologies and modern high-tech processes. The laboratory has several traditional bòvila brickyard kilns of the type traditionally found on large rural estates in Catalonia.



Advanced
Architecture
Barcelona

PUJADES 102
08005 BARCELONA, SPAIN
T +34 933 209 520
INFO@IAAC.NET
WWW.IAAC.NET