

Design Computing 2018 Exhibition 11.10. - 17.10. 2018

The Design Computing exhibition shows education, research, and work done on the application of advanced computational technologies in schools of architecture and architectural firms from all over the world. The exhibition is in the form of a video exhibition, because design computing is about process, and not about the final form of designs.

Design computing is not a style

"Computing", as the name suggests, is a verb, that is, an activity. It is a way of thinking and looking at architecture as an active system. Computational design thinking provides a vocabulary through which we can connect people and things as actors on many different levels. Objects, buildings, and urban environments are dramatically influenced through this new lens. Better understanding of the design process leads to tools that act as partners during design. Knowledge and simulation feed forward in the design process to inform our design decisions.

Design computing is not architecture first, computer second

How does the architectural discourse change when we look at it from a design computing point of view? Although computers are used in architecture already for more than 60 years, we are still at the early phase to understand this question. We do not have the luxury of time, though. Production and consumption of goods and raw materials have reached an unprecedented height and threatens life on this planet. We need a different way of thinking, designing, building, and managing that better balances our resources. Thinking of architecture as a passive container is not adequate anymore. Typology must be broken up to form hybrid and appropriate answers to society's needs.

Schools in design computing

Design Computing video programme | FA CTU, MOLAB

Atelier Achten-Pavlíček

R

Atelier FLOW Florián-Kurilla

Design Computing video programme | others universities

Aalborg University | Acoustic Studio 2018 Aalborg, Denmark | Isak Worre Foged and Mads Brath Jensen | Courtesy Isak Worre Foged

Aalborg University & AREA (Applied Research in Environmental Architecture) | Sense IV Copenhagen, Denmark | Courtesy Isak Worre Foged Aalborg, Denmark

Aalborg University | Parametric Urban Design Aalborg, Denmark | Nicolai Steino and Kristian Mortensen | Courtesy Nicolai Steino

Architectural Association | Design and Build 2017-2018 School of Architecture, London, United Kingdom | EmTech: Emergent Technologies and Design | Michael Weinstock and Elif Erdine, EmTech group and program students | Courtesy Elif Erdine and Michael Weinstock

Braunschweig University of Art | Breathe Braunschweig | Germany + Audi + Bigrep | Manuel Kretzer and Audi/Bigrep team | Courtesy Manuel Kretzer

Cardiff University | Digital COBstruction II Welsh School of Architecture, Cardiff, Wales, United Kingdom | Aikaterini Chatzivasileiadi, Wassim Jabi, and Mohamed Gomaa | Courtesy Wassim Jabi

Chalmers University of Technology | The Architectural Convertibles Gothenburg, Sweden + Royal Institute of Technology, Stockholm + Swedish School of Textiles, Boras + University of Arts, Crafts and Design Konstfack, Stockholm | Malgorzata Zboinska, Delia Dumitrescu, Fredrik Nilsson, Monica Billger, Ulrika Karlsson, Hanna Landin, Pablo Miranda, and Karin Hedlund | Courtesy Malgorzata Zboinska

Future Cities Laboratory | Cognitive Design Computing ETH Zurich, Switzerland + National Research Foundation Singapore, Singapore | Gerhard Schmitt, Reinhard Konig, Katja Knecht, Kateryna Konieva, and Yufan Miao | Courtesy Gerhard Schmitt

Gramazio Kohler Research | Gradual Assemblies ETH Zurich, Zurich, Switzerland + Istituto Svizzero + dfab + Gruner | Courtesy Esther Lombardini

Gramazio Kohler Research | Spatial Timber Assemblies ETH Zurich, Zurich, Switzerland + dfab + Nest | Courtesy Esther Lombardini

Graz University of Technology | Dynamic Shaping Graz, Austria | Institute of Architecture and Media | Renate Weissenboeck | Courtesy Renate Weissenboeck

Hong Kong Polytechnic University | Inno Bubbles Hong Kong, People's Republic of China + FoxLin Architects, San Clemente, California | Courtesy Michael Fox

University Institute of Lisbon, Information Sciences | Digital Technologies for Architecture Technologies and Architecture Research Centre, Lisbon, Portugal | ISTAR-IUL research team, Master students, PhD students | Courtesy Sara Eloy

Instituto Superior Tecnico | Algorithmic Design for Architecture Lisbon, Portugal | Courtesy Antonio Leitao

Israel Institute of Technology | T_CODE Laboratory research projects Haifa, Israel Michael Weizmann, Arielle Blonder, Guy Austern, Yasha Jacob Grobman | Courtesy Yasha Jacob Grobman

The main pedagogical model for many schools of architecture is the design studio. Indeed, learning how to design is the main skill that schools confer to students. Although this pedagogical model is quite old, it is also very poorly understood. There is a lot of implicit learning by showing going on, and students do not get explicit knowledge about the design process. Partly this is necessary, because we train students to deal with problems that have no ready or just one good answer. Experimentation is key to most examples we see here and in everyday programs of schools that engage in design computing. All people, tutors and students alike, are learners in this process.

Companies in design computing

Computer Aided Design in the paradigm of the "electronic drawing board" was hugely successful in the building and construction industry, because it replaced traditional work processes in much the same way as was done before, and did not challenge the status quo. It just made things faster and more efficient. After this wave of automation, companies have realized however, that architecture can be addressed in different ways, that gives them an edge in the competition. Faster and more efficient production allows freeing up the thinking time on the conceptual level. Exploration, simulation, and forward calculation of the impact of design decisions on the end result of the design process, increase the odds to come up with better designs.

Design computing is architecture

The exhibition shows from over 40 universities and architectural firms how they apply design computing in their work. As can • be readily seen from the many examples, almost without any example, all computing is embedded in material and tectonics. The "digital" affords us to design and act in an informed way during the design process. We are pleased to have so many contributions on the design computing exhibition. All participants are listed here on this poster. We thank all contributors for their willingness to share their work on this exhibition.

Pablo Zamorano research | Expandable Surface System, Water Fields London, United Kingdom | Pablo Esteban Zamorano, Jacob Bek, Nacho Marti, Marcos Cardenas | Courtesy Pablo Esteban Zamorano

Penn State College Stuckeman Centre for Design Computing | NASA 3D-Printed Habitat Challenge State College, Pennsylvania | Courtesy José Duarte

Princeton University | Flexing Room: Embodied Computation Princeton, New Jersey | Axel Kilian | Courtesy Axel Kilian

Rio de Janeiro Federal University | Genetic Landscape, Tetra-Script, Honeyscape, Wiki-House, Tornado Pavillion, Butterfly Gallery Rio de Janeiro, Brazil, LAMO: Laboratório Modelos 3D e Fabricação Digital + LabIT + Science Park UFRJcollaborative projects | Courtesy Goncalo Castro Henriques

Technische Universitat Munchen | Interactive Design Environment Chair for Architectural Informatiks, Munchen, Germany Gerhard Schubert, Frank Petzold | Courtesy Gerhard Schubert

Technische Universitat Munchen | Tangible Grasshopper Chair for Architectural Informatiks, Munchen, Germany Gerhard Schubert, Frank Petzold, Boris Plotnikov, Tibor Goldschwendt | Courtesy Gerhard Schubert

Technische Universiteit Delft | Technoledge Design Informatics Delft, Netherlands + Wroclaw University of Science and Technology, Wroclaw, Poland | Serdar Asut, Friso Gouwetor, Jerzy Latka, TU Delft + Wroclaw students | Courtesy Serdar Asut

Technische Universiteit Delft | Doubleface 2.0 Delft, Netherlands | Chair for Design Informatics, Chair for Building Physics & Services, Michela Turrin, Martin Tenpierik, Tudor Cosmatu, Sevil Sariyildiz, Peter Luscuere | Courtesy Michela Turrin and Sevil Sariyildiz

Texas A&M | Architecture Mediator projects Department of Architecture, College Station, Texas | Negar Kalantar, Ward Wells, tranSTUDIO | Courtesy Negar Kalantar

Universitat Kassel | Solar Spline Project Kassel, Germany + Kunsthochschule Kassel, Kassel, Germany | Timo Carl, Markus Schein, Frank Stepper | Courtesy Timo Carl

University of Auckland | The Digital Igloo Auckland, New Zealand | Design and Digital Media + AEC Futures Research Group + Centre for Advanced Composite Materials + Unitec | Dermott Mc Meel, Cameron Spicer, Jack Guo, Nick Young, Robyn Walton, Pete Cleveland, Karl Butler, Yinan Liu, Mark Battley, Peter McPherson, Yusef Patel, Annaliese Mirus | Courtesy Dermott Mc Meel

University of Cyprus | Advanced Computer-Aided Design Topics Nicosia, Republic of Cyprus | Odysseas Kontovourkis and Faculty students | Courtesy Odysseas Kontovourkis

University of Kentucky | Resonance House Lexington, Kentucky | Courtesy Gregory Luhan

University of Liverpool | Iterative Agent Based Design Liverpool, United Kingdom | Leyla Deniz, Tuba Kocaturk | Courtesy Tuba Kocaturk

University of Melbourne | Mould Racing Melbourne, Australia | Stanislav Roudavski, Alexander Holland, Julian Rutten | Courtesy Stanislav Roudavski

University of Melbourne | Pocket Pedal Melbourne, Australia| Stanislav Roudavski, Alexander Holland | Courtesy Stanislav Roudavski

University of Nevada Las Vegas & University of Calgary & University of Waterloo & Ball State University

Calgary, Canada Las Vegas, Nevada Waterloo, Canada Muncie, Indiana Small Parts, Complex Effects, Arcus Animus, Morpholuminescence, Twist Student teams of the faculties, Joshua Vermillion, Jason Johnson, Ludwing Vaca, Elizabeth Boone, Eric Brockmeyer, Adam Buente, Kyle Perry, Mahesh Daas, Philip Beesley, Brad Rothenberg, Richard Sarrach, and Evan Douglis | Courtesy Joshua Vermillion

University of New South Wales | Bachelor of Computational Design projects: Participation Plus, Hextic, Interchanging Sydney, Australia | Courtesy Matthias Haeusler and Daniel Yu

University of Novi Sad | Shark Skin Panels Novi Sad, Repubic of Serbia | Digital Design Centre | Bojan Tepavčević, Vesna Stojaković, Marko Jovanović, Ivana Bajšanski, Marko Vučić, Dejan Mitov, and student team | Courtesy Vesna Stojaković

University of Sydney | Robotic Fabrication of Acoustic Surfaces Sydney, Australia | Dagmar Reinhardt, Densil Cabrera, Alexander Jung, and Rod Watt | Courtesy Dagmar Reinhardt

Companies featured with videos at the exhibition

Arup | Skills Acceleration Centre London, United Kingdom | Courtesy Ramon van der Heijden

Bots101 | Say It = Make It | 3D Modelling With Bots101 Herzliya, Israel | Courtesy Eyal Nir



Graphisoft By Design | Season 2, Episode 2: Future Proof Graphisoft N.A., Boston, Massachusetts | Courtesy Graphisoft, Len Dickter, Brian Johnson

MVRDV | Parametric Design Services for Valley Rotterdam, Netherlands + Arup, London, United Kingdom | Courtesy Gijs Rikken

OceanCN UrbanISMS: Paradigmatic Practices + Their Multifarious Platforms Hong Kong, People's Republic of China | Courtesy Tom Verebes

Jenny Sabin Studio | MoMA PS1 Young Architect's Program 2017 | Lumen by Jenny Sabin Studio Ithaca, New York | Courtesy Jenny Sabin and Jordan Berta, Cornell University

Eva Sopéouglou architect | Summer Residence in Sithonia, Helkidiki London, United Kingdom | Courtesy Eva Sopéoglou

Synthesis Design + Architecture | Desk and Storage System for a Private Home Office, Data Moiré, Office overview Los Angeles, California | Courtesy Alvin Huang

Tactile Architecture - Office für Systemarchitektur | Physarum Polycephalum Research and Design Berlin, Germany | Courtesy Liss C | Werner

UN Studio | Services and Interior Design Office Overview Amsterdam, Netherlands | Courtesy Ben van Berkel and Steve O'Reilly

Xenia Automated Design Platform | Xenia Automatic Design Platform showcase Keisarya, Israel | Courtesy Shmulik Bilgoray

Rene van Zuuk architekten | René van Zuuk Foam-Cutting Method Almere, Netherlands | Courtesy René van Zuuk

Design Computing Diploma Projects | FA CTU, FLO|W, MOLAB

Designing Architecture for Virtual Reality for Digital Life of Avatars in the Future | Markéta Gebrian

Sound Shape Space | Karolína Kotnour

Evo Tectonics | Michal Bednář

SCAR | Dominik Císař

Carbon Fibre Bridge | Jakub Fišera

Data City | Pavel Paseka

Heliotrop Habitat | Ondřej Pokoj

Neoplasm | Ondřej Pokoj

Transferium | Ondřej Pokoj

TweetBot | Ondřej Pokoj

Skycraper 3.0 | Ondřej Tomšů

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Cze-Growing | EXPO 2020 | Jakub Trčka

The Growing Architecture | Jakub Trčka

Soběstačné město | Martin Žatečka

Polyfunkční atletická hala a velodrom v Brně | Lucie Hanzlíková, MOLAB_Atelier Achten-Pavlíček

Design Computing Models | FA CTU, FLO|W



- FRACT | Dominik Císař
- re:location | Jindřich Ráftl
- 2:Real | Jan Tůma
- Space for double-reality performance-interactive scene concept
- swarm_bot_concept | Dan Volák
- BlockO1~Liquid Zooid | Michal Bednář
- Swarm Tower | Jan Petrš
- Origami Gallery | Ondřej Otýpka
- Metaballs ponds | Nina Pevná
- Coral Tower | Petr Bláha
- Tensegrity Tower | Ondřej Otýpka
- Walking Gallery | Nina Pevná
- Art Palace Prague | Nina Hedwic Housková

Membrane Models | Studio FLO|W

Construction of Membrane Roofing Tennis Areal Praha-Štvanice | Daniel Vejstrk Transferium Praha | Ondřej Pokoj

Design Computing Actions, Design Computing in Practice

Monday 15.10.2018 atfternoon

- 3D tisk Molab | Jiří Vele
- Bogle Architects | Ian Bogle
- AED a BIM | Lucie Martínková and others.....

Tuesday 16.10.2018 afternoon

- Virtual reality in design proces | Stanislav Moravec
- The Czech Pavilion for EXPO 2020 | Jindřich Ráftl, Jan Tůma, winning proposal and others.....

- Design Computing Exhibition
- 11.10. 17.10. 2018
- Faculty of architecture, Czech Technical University of Prague Department of architectural modelling
- Curators of exhibition | Henri Achten, Miloš Florián, Dana Matějovská
- The exhibition is connected with the students research conference Design Computing (11.10.2018), supported by the grant SVK 33/18/F5, Czech Technical University in Prague

GRAPHISOFT

Graphics | Martin Král

- Realization of the exhibition | Ondřej Pokoj | Joinmusic, s.r.o
- Partners | Mirro, s.r.o. | Cegra, s.r.o. | Dimensio, s.r.o. | CadConsulting, s.r.o.



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