

Contact

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Skills

architectural design
computational geometry
digital fabrication
machine learning
data science
virtual and augmented reality
digital art history

Languages

German (native)
English (fluent)
French (fluent)
Spanish (basic)

Programming

Python (scikit learn, scikit image, Keras, Tensorflow), Java, Processing (Java and Python), C#, Javascript (p5js, three.js, d3.js, Babylon.js), VectorScript, PHP, MySQL

Software

Rhino3D, Grasshopper, RhinoCAM, Unity3D, Revit, VectorWorks, Abaqus, KeyShot, Adobe Creative Suite (ID, AI, PS), MS Office

Released Software

Axolotl, Docofossor, compas_vol, mola

Hardware

industrial sand binderjet 3D printer (VX1000), FDM 3D printer, CNC mill, laser cutter, cutting plotter, robotic arm (Kuka, ABB, UR), virtual reality (Oculus DK2, HTC Vive, Google Cardboard)

Exhibitions

2019: How to Build a House, the DFAB HOUSE at Swissnex, San Francisco and Cooper Union, New York

2019: AI Art Gallery, NeurIPS Workshop on Machine Learning for Creativity and Design

2016: Incidental Space, Swiss pavilion at the Venice architecture biennial

2016: Advances in Architectural Geometry AAG, Zurich

2015: Gugelmann Galaxy at LangerSonntag, Swiss National Library, Berne

2007: ARCH/SCAPES, Swiss pavilion at the Sao Paulo architecture biennial

Award

2017: 1st prize in Technology and Innovation for skeiETHon at the 16th German Concrete Canoe Regatta in Cologne



Mathias Bernhard

Dr. sc. / Postdoctoral Researcher

Digital Building Technologies / ETH Zurich

Mathias Bernhard is an architect with profound specialization in computational design, digital fabrication, and information technology. In particular, he is interested in how artefacts can be encoded, made machine-readable, and digitally operational. His research focuses on how the increasingly ubiquitous availability of data and computational power influences the design process and how different methods of artificial intelligence, machine learning or evolutionary strategies can be employed in the development of our built environment.

He has more than ten years of experience in researching and teaching at the intersection of architecture, computer science and digital fabrication. He worked on numerous projects of international renomee, in interdisciplinary teams, and at a broad range of scales. His work has been published in recognized field-relevant conference proceedings and peer-reviewed journals, as well as exhibited internationally.

Education

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|-------------|---|
| 2019 | Doctor of sciences (Dr. sc.) ETH Zurich, Department of Architecture
<i>Domain Transforms in Architecture - Encoding and Decoding of Cultural Artefacts</i> |
| 2008 - 2009 | Master of Advanced Studies in Computer Aided Architectural Design MAS CAAD, ETH Zurich |
| 2004 - 2006 | Studies in architecture at ETH Zurich, Graduation: Master of Science MSc / Diploma in Architecture, supervisor: Prof. Gregor Eichinger |
| 2000 - 2004 | Studies in architecture at École Polytechnique Fédérale de Lausanne EPFL, Graduation: Bachelor of Science BSc |

Professional Experience

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|-------------|---|
| since 2015 | Researcher (now Postdoc) and teaching assistant at the chair for Digital Building Technologies DBT, ETH Zurich, Prof. Dr. Benjamin Dillenburger |
| 2017 / 2018 | Visiting lecturer for "Introduction to Python and BIM Programming for Architects" at CAS digital |
| 2016 | Visiting lecturer for "Digital Fabrication" at Object Design studies, University of Applied Sciences Lucerne HSLU |
| 2009 - 2015 | Research and teaching assistant at Computer Aided Architectural Design, ETH Zurich, Prof. Dr. Ludger Hovestadt |
| 2010 - 2012 | Project architect and CAAD specialist in the interdisciplinary planning team for the Institute of Technology in Architecture |
| since 2007 | Specialist planner for computational design and digital fabrication for various architecture and design practices |
| 2006 - 2008 | Research, teaching and technical assistant at the Rapid Architectural Prototyping Laboratory RAPLAB, ETH Zurich |
| 2002 - 2003 | Internship at Bauart Architects, Berne |

Public Talks

- 2020: webinar "Computational Design in Architecture" at Princeton University, School of Architecture, invited by Prof. Dr. Ștefana Parascho (ARC 374)
- 2020: lecture "Computational Design for 3D Printed Architecture at the Additive Days in Sofia, Bulgaria
- 2019: lecture at the Winterapéro of Burkhardt+Partner AG architects, cinema westside, Berne
- 2018: presentation at the Advances in Architectural Geometry conference in Gothenburg, Sweden
- 2016: lecture "Complex Architectural Elements" at AMX, the Additive Manufacturing Expo at Messe Lucerne