



Joel Hilmersson

Architect,
Structural Engineer,
Programmer

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Nationality:
Swedish

Languages:
Swedish (Native)
English (C2)
French (Basic)
German (Basic)

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Professional Experience

AKT II

02. 2020 -

Computational Designer (Applied Research Team) - London, UK

Split role between project team and software development team focusing on creative collaboration, computational geometry and software interoperability. Some highlights include:

- **Red Sea Project: Hotel 12 - Foster + Partner**
Form finding and design of a set of getimber lattice gridshells
- **Various Sculptures - Dewitt Godfrey**
Behaviour driven geometry generation and fabrication preparation for large scale sculptures.
- **Khudi Bari @ RA Summer Show - Marina Tabassum**
Design and construction of a bamboo pavillion including full scale 3d printed node prototypes.
- **Lead developer of Reakt: AKT II's Interoperability toolkit**
Lead a major rewrite of the toolkit, overhauling the core object model (AKT.Core) exchanges between software (AKT.Conversions) and the grasshopper toolkit (AKT.GH) putting a modular structure in place. Further added functionality including computational geometry / meshing, and real time data exchange with our Unity apps from GH.

Worked using Rhino, Gh, Visual Studio, C#, C++, Python, 3d printing, git and various FE-analysis packages and their APIs

Sunnerö Architects

08. 2019 - 11. 2019

Computational Design Consultant - Gothenburg, Sweden

Providing development of a grasshopper toolset to aid the sketching process of housing projects

Bollinger + Grohmann

Intern - Oslo, Norway

05. 2018 - 09. 2018

3d Modeling/Structural analysis/Optimisation/Graphics (Rhino, Revit, Adobe CC, Karamba/Octopus)
Mainly early stages / competitions with among others, *Snohetta, Lund Hagem, Tomas Saraceno*.

Knippers Helbig Advanced Engineering

Intern - Stuttgart, Germany

06. 2015 - 06. 2016

- **SAB Headquarters, Leipzig // ACME**
Algorithmic definition and optimisation of forest of columns geometry/structure
- **Taipei Terminal 3, Competition // UNStudio**
Structural concept, competition graphics, booklet layout
- **St Barths Residence // Diller Scofidio + Renfro**
FE -Analysis and parametric 3d modeling of freeform timber-plate structure, member design
- **Gridshell at Sharjah Mall, UAE**
Parametric geometry development, FE-Analysis, Member/connection design

Education

M.Arch Architecture & Urban Design

09. 2017 - 09. 2019

Chalmers University of Technology

Thesis project: Borderline Bodies

M.Sc Structural Engineering & Building Technology

09. 2016 - 09. 2019

Chalmers University of Technology

Exchange Year, TU Delft

08. 2016 - 07. 2017

Studies in Structural Engineering with a focus on structural mechanics

Thesis project: Isogeometric analysis and form finding of thin elastic shells

B.Sc Architecture and Engineering

08. 2012 - 06. 2015

Chalmers University of Technology, Gothenburg, Sweden

Interdisciplinary program at the faculty of architecture.

Industrial Design

09. 2008 - 06. 2011

Gymnasium, Upper Secondary School

Academic Involvement Teaching

Reviewer, Chalmers University

- *Space & Geometry*: Architecture & Engineering Year 1 2019

Tutor, Chalmers University

- *Structural Mechanics*: Architecture & Engineering Year 3 2018, 2019
- *Solid Mechanics*: Civil & Architecture & Engineering Year 2 2019
- *Exploring Architecture using Digital Design*: Architecture Year 1+2 2018
- *Mathematical Sketching*: Architecture & Engineering Year 1 2015
- *Mathematical Analysis in One Variable*: Architecture & Engineering Year 1 2015
- *Form & Technics*: Architecture Year 1 2015

Papers

PrismArch Deliverable 2.3: 10. 2021

Final revised version of parametric space of design, algorithms for AI assisted editing/ design in VR, and algorithms for designer modelling

Contributed chapter 4.2.3 documenting my research on applying the evolutionary algorithm presented to shape optimisation for shell structures, concluded as a framework in grasshopper developed in C#.

PrismArch Deliverable 1.2: 10. 2021

Elaborated report of cross-discipline principles-rules-constraints, and interfaces definition for cross-disciplinary and multi-simulation perspectives in VR

Contributed chapter 2.1, 2.2 and 2.3 featuring a review of current AEC ontologies

IASS 2021 Conference Paper: 09. 2021

The Geldeford Riband

Dewitt Godfrey, Jeg Dudley, [Joel Hilmerisson](#)

IASS 2019 Conference Paper: 10. 2019

Isogeometric analysis and form finding of thin elastic shells

[Joel Hilmerisson](#), Jens Olsson, Mats Ander, Prof. Fredrik Larsson

Other

PrismArch (Horizon2020 project) 11. 2020 - 01. 2023

At AKT II I have been involved in a EU funded research project on collaborative design in VR. Collaborators on the project included Zaha Hadid Architects, ETH and University of Malta among others.

Advances In Architectural Geometry 2018 - Local host 08. 2018

Local host and participant at the workshop "Digitally Implicit Morphologies".

Software

Modeling and Graphics

- *Rhino/Grasshopper (Advanced)*,
- Revit/Rhino.Inside (Basic)
- Vray, AdobeCS (AI,PS,ID), AutoCAD
- Good insight into AEC object models such as IFC, Speckle etc.

Analysis and Simulation

- Sofistik
- SAP2000 (+API)
- Karamba, Kangaroo etc.
- ETABS API
- Robot API
- Strong mathematical understanding of computational geometry such as NURBS and meshes and linear/nonlinear FEA/IGA.

Programming

- *C# (Advanced)*
- Python (Intermediate)
- MATLAB (Intermediate)
- C++ (General C# interop)
- Visual Studio
- git (github, gitlab)
- Experience including graph theory for geometry and object oriented programming concepts

Misc.

- 3D Printing using both SLA and FDM
- General knowledge of CNC milling and KUKA Robots