Sandie Kate FENTON
Architectural Engineer, M. Eng.

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INTERESTS : Computational design, Machine Learning, Environmental Engineering, Structural Engineering

ACADEMIC AND PROFESSIONAL EXPERIENCE

10.2020 present	**Bollinger + Grohmann, Paris, France** Applied Doctoral Student *www.bollinger-grohmann.com* Research - Machine Learning strategies for embodied carbon reduction in structural design
06.2020 10.2020	**Bollinger + Grohmann, Paris, France** Structural Engineer *www.bollinger-grohmann.com* Structural engineering, geometric development and optimization, sustainability, research - buildings
03.2019 03.2020	**Block Research Group, Institute of Technology in Architecture, ETH Zurich, Switzerland** Project Assistant *block.arch.ethz.ch/brg/project* Research, computational and parametric design, digital fabrication - shell and formfound structures
10.2018 02.2019	**TECHO, Ingenieur du Monde, Chile** Engineering/architecture intern *www.techo.org/chile/category/mapa-de-proyectos-region-de-valparaiso/* Work-site management and inspection, modelling - social housing
08.2017 10.2017	**Institute for Building Structure and Structural Design, ITKE Stuttgart University, Germany** Biomimetic design intern *www.itke.uni-stuttgart.de/research/built-projects/* Research, structural analysis, digital fabrication - biomimetic compliant shading systems

EDUCATION

09.2020 present	**Applied Doctoral Studies, CY University - ENSA-Versailles - Bollinger + Grohmann , France** PhD Candidate : "Machine Learning strategies for embodied carbon reduction in structural design." Advisors : Prof. L. De Laet, Prof. G. Pierluisi, K. De Rycke
09.2017 09.2018	**Master of Engineering, Vrij Universiteit Brussel - Universite Libre de Bruxelles, Belgium** Architectural Engineering - Great Distinction *Master Thesis : "Biomimetic design based mechanisms in architecture."*
09.2016 09.2017	**Master Year, Ecole Polytechnique fédérale de Lausanne, Switzerland** Study abroad program - Civil Engineering
09.2013 09.2016	**Bachelor of Engineering, Universite Libre de Bruxelles, Belgium** Architectural Engineering - Great Distinction

Research

Machine Learning strategies for embodied carbon reduction in structural design   2020 - PRESENT
Research within Bollinger + Grohmann
Implementation of tool for embodied carbon prediction

HiLo - doubly curved concrete shell   2020
Research within the Block Research Group
Fabrication of lightweight cable-net and fabric formwork system for roof structure

HiLo - rib-stiffened funicular floor systems   2019
Research within the Block Research Group
Design and fabrication of lightweight and unreinforced floor system with minimal environmental impact

Pneumatic actuators for compliant facade shading system   2018
Research within the ITKE
Design, fabrication and testing of pneumatic actuators

Flectofold - biomimetic facade shading system   2017
Research within the ITKE
Design and fabrication Elastic-Kinetic Facade Shading System

Bollinger + Grohmann - Reference Projects

LCA Workgroup   2020 - PRESENT
Development of LCA tools and implementation of LCA workflows
`Carbon reduction`

Parametric Workgroup   2020 - PRESENT
Development of parametric workflows for structural design
`Automatization` `Optimization`

AZC - Bobigny Ecoparc   2022
Structural design of parking and storage building
`Design for flexibility`

Roofscapes - Rooftop Terrace   2021
Structural design of wood rooftop for haussmanian housing
`Lightweight design` `Wood reuse`

XDGA - Silos   2020
Repurposing of existing silos for housing
`Reuse` `Structural optimization`

SCAI - Bruges Stadium   2020
Parametric design and optimization of roof structure
`Parametric design`

Teaching

06.2022	Intelligent fabrication – Transforming Timber, ENSA-Versailles,
01.2022	Climate Fresk, CY Paris Université
01.2021	Circular economy in structural design, Volumes workshop, Online
07.2020	Intelligent fabrication – Timber Patterning, ENSA-Versailles

Awards / Grants

2021	Vrije Universiteit Brussel , Eutopia Joint PhD, Research Grant
2019	LafargeHolcim, Zero Carbon Hack - BRG, 1st Prize
2019	National Centres of Competence in Research, CH, Equality Grant
2018	HERA Master's Thesis Awards, Sustainable Architecture, Nominated

Language Skills

| Native | French, English, |
| Fluent | Spanish , Dutch |

Software Skills

Design	Rhinoceros, Autocad, Revit, Blender, Sketchup, Laser-cutting
Code	Python, R, COMPAS, Grasshopper
Structure	RFEM, RSTAB, Karamba, Ansys
LCA	One Click LCA, Carbon Tool
Office	Excel, Word, Powerpoint, Project, LaTeX
Adobe	Photoshop, Illustrator, Indesign

Interpersonal Skills

| Work | Motivated, Commited, Self-starter, Multitasker, Creative, Good Verbal and Written Communication |
| Team | Team player, Collaborative, Active Listener, Constructive-criticism |

List of publications

Peer-reviewed international conference publications

Fenton, S., De Rycke, K., Munteanu, A., Deligiannis, N., Rufat, S., and De Laet, L. (2022). Strategies for data-driven low carbon structural design. In *Proceedings of the IASS Symposium 2022*

Fenton, S., De Rycke, K., and De Laet, L. (2021). Introducing strategies for data-driven low carbon structural design. In *Proceedings of the IstructE Young Researchers Conference 2021*

Other publications

Fenton, S. K. (2022). Strategies for data-driven low carbon structural design. *Symposium Poster, The Future of Construction – Construction Robotics and Computational Design for Sustainable Construction*

Fenton, S. K. (2021). Bollinger + grohmann : L'IA au service de l'architecture. *UNSFA, Passion architecture*

References

Name	**Dr. Philippe Block**
Institution	Block Research Group - Institute of Technology in Architecture - ETH Zurich
Position	Full Professor / Chair of Architecture and Structures / Director NCCR Digital Fabrication
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Name	**Dr. Ahmed Khan**
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Position	Associate Professor
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