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# SANJAY SOMANATH

PhD Student / Architect

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I'm a PhD student, Architect and a digital enthusiast. The focus of my PhD research is Social sustainability in neighbourhoods, specialising in computational design methods and GIS and how digitalisation can help in collaborative decision making for resilient and equitable neighbourhoods. The goal of the PhD research is to develop open-source digital tools for Architects and Urban planners to help them make better decisions. I'm interested in how digitalisation can help shape cities. Much of data, knowledge and skills are not within the reach of practitioners, often *siloed* and fragmented. I want to contribute to an AEC industry where technical know-how and access to data is not a barrier to creating thriving built environments.

## EXPERIENCE



### PhD Student / Computational Sustainable Design

Chalmers University of Technology

2020 — Present

Gothenburg, Sweden

- Development of open-source python package for socially sustainable neighbourhood design.
- Stakeholder engagement and interviews
- Actively contributing to the Digital Twin City Center at Chalmers University of Technology
- Visualisation of large scale urban data.
- Supervising masters students on topics at the intersection of Cities and AI
- Popular science communication through publications and seminars.

### Computational Designer / Knowledge Transfer Partnership

University of Nottingham | FlexiSolar Ltd. | Inside2Outside Ltd.

2019 — 2020

Cambridge, UK

- Developed file to factory parametric tools that prevent duplication and recreation of models.
- Design and Optimization of Solar Carports through solar analysis using open-source parametric tools.
- structural optimization of steel frames through a parametric optimization process.
- Creation of various parametric subroutines to streamline internal workflows.
- Responsible in the creation and implementation of an ISO BIM documentation framework in the company.

**Experience summary** Project Management skills, ISO Document control procedures, UK Building regulations and renewable energy markets, design of PV Systems, renewable energy consultancy, UK Construction practices, Procurement, Process of planning permissions and DNO approvals, client interfacing and presentations, Market research and sales strategies.

### Revit Instructor / B.Sc Course

University of Nottingham

OCT 2018 — DEC 2018

Nottingham, UK

- Was responsible for designing and delivering Revit Tutorials to undergraduate students in Architectural Engineering and designing course work and course content.
- Architectural Concepts and introduction to construction principles and drawings.
- Energy analysis and Energy efficient construction methods.

### Design Engineer / Smart Greenhouse Systems

Evolve Growing Solutions

AUG 2018 — DEC 2018

Melton Mowbray, UK

- Thermodynamic modelling and simulation of fluids, energy and optical calculations for light passing through façade members on Ansys and COMSOL.
- Prepared drawings and CAD models for structural analysis and fabrication of Natural Light Greenhouses using ETFE.
- Production, design and fabrication using ETFE.
- Developed parametric models to streamline design of inverse kinematic roof joints for Volente Greenhouse Roofs.
- Research, development and presentation of projects sustainable CHP plants towards achieving localized circular economy.

**Experience summary** Fabrication methods, production of Erection Drawings, UK Regulations for Construction of Non-Residential structures, Market research, Client interfacing, Presentations, Procurement and Costing.

### Trainee Architect / Architectural Design

Gulf contracting company | Interspace (Subsidiary of Interserve UK)

JAN 2017 — JUL 2017

Doha, Qatar

- Was responsible for coordination between design team and execution team on site.
- Worked on interior fit-out projects.
- Was responsible for the design and development of Project Qatar pavilion for Gulf Contracting.

**Experience summary** Architectural Visualization, 3D Modelling, Proposal Drawings, Design Development, working on large infrastructure projects like Substations, Airport Refurbishments. Worked on High profile projects such as Supreme Council for Delivery and Excellence, Hamad International Airport, Dealing with Transportation authorities and Ministry of Urban Planning for planning permissions.

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## Trainee Architect / Architectural Design

AUG 2016 — DEC 2016

Lacasa Qatar

Doha, Qatar

- Worked on architectural development and coordination between different trades involved in the projects.
- Projects worked on include high rise residential tower in Pearl Qatar as well as Luxury residential projects in the Pearl Qatar.
- Was responsible for visualization, design presentation and interaction with client to better understand their requirements.

**Experience summary** *Architectural Scheduling, Quantity Surveying, Architectural Visualization, Concept Design and Presentation, Local Regulations for Habitable Spaces, coordinating with electrical and structural consultants to deliver High rise residential projects.*

## EDUCATION



**Masters of Architecture - Digital Architecture and Tectonics**, University of Nottingham

2017 — 2018

**Santander Fellow**, Santander Universities

2017 — 2018

**Bachelor of Architecture**, BMS College of Engineering

2012 — 2016

## SKILLS



### Tools and Languages

Python, Git,  $\LaTeX$ , Markdown, Grasshopper

### Software Packages

Most BIM and 3D modelling and illustration packages (AutoCAD, Revit, ArchiCAD, Rhino, Sketchup, Blender, 3DSMax, Photoshop, Illustrator...) IESVE, Ladybug, Honeybee, OpenStudio, Optics (LBNL), Therm (LBNL), SAM (NREL), PVSyst, COMSOL

### Quantitative Research

Agent Based Modelling, Travel demand Analysis, Building Performance analysis

### Qualitative Research

Stakeholder Interviews and Analysis, Literature Studies, Stakeholder Workshops, Technical Workshop,

### Communication

English (Native proficiency), Hindi (Native proficiency), Kannada (Conversational), Malayalam, Arabic (Conversational)

## PUBLICATION



- Somanath, S., Hollberg, A., Thuvander, L. (2021). Towards digitalisation of socially sustainable neighbourhood design. *Local Environment*, 26(6), 770–789. <https://doi.org/10.1080/13549839.2021.1923002>
- Somanath, S., Yu, Y., Nordmark, N., Ayenew, M., Thuvander, L., Hollberg, A. (2021). AI-baserad segmentering av fasader för att optimera renovering i en större skala. *Bygg Och Teknik*, 2021(2), 26–29.
- Stahre Wästberg, B., Billger, M., Thuvander, L., Latino, F., Somanath, S., Raalte, S. van. (2021). MiljöVis: Effektiv representation av miljödata i digitala modeller.
- Somanath, S., Hollberg, A., Thuvander, L. (2021). A user interaction model for digital tools to support socially sustainable neighbourhood planning. *Proceedings for CUPUM 2021 - 17th International Conference on Computers in Urban Planning and Urban Management*. CUPUM - Computational Urban Planning and Urban Management, Helsinki, Finland.
- Somanath, S., Hollberg, A., Thuvander, L. (2020). Towards digitisation of socially sustainable neighbourhood design. *Act Sustainable Research Conference*, Gothenburg, Sverige.
- Somanath, S., Hollberg, A., Beemsterboer, S., Wallbaum, H. (2020). The relation between social life cycle assessment and green building certification systems. *SLCA2020: 7TH INTERNATIONAL CONFERENCE ON SOCIAL LIFE CYCLE ASSESSMENT: IMPACTS, INTERESTS, INTERACTIONS*, Gothenburg, Sverige.
- Somanath, S., Reed, V., Carpenter, R., Davidson, S., Wu, J., Beccarelli, P. (2019, October). Review of parametric strategies for design optimization of built structures. In *Proceedings of IASS Annual Symposia* (Vol. 2019, No. 16, pp. 1-12). International Association for Shell and Spatial Structures (IASS).

## Articles and Co-Supervised Thesis

- Pimentel, K. (2021, March 8). Visualizing the invisible: The sound of real and virtual worlds. *Unreal Engine*. Retrieved February 28, 2022, from <https://www.unrealengine.com/en-US/spotlights/visualizing-the-invisible-the-sound-of-real-and-virtual-worlds>
- Nordmark, N., Ayenew, M. (2021). Window Detection In Facade Imagery: A Deep Learning Approach Using Mask R-CNN. *arXiv preprint arXiv:2107.10006*.