

Academic Grades

Ph.D reseach fellow

Welsh School of Architecture, Cardiff University, 2014 - 2017 (expected) | Funded by Engineering and Physical Sciences Research Council

Topic | A Framework for Robotic Assisted Design in Architecture

M.Arch

Master Degree in Architecture and Urbanism

AADRL, AA School of Architecture, London. 2008 - 2010

Concentrations : Computational Achitecture, parametric design, mass customization fabrication processes

Architect Registration

Official registered architect - DGP 4631234

Direccion General de Profesiones (General Direction of Professionists), Mexico City 2006.

B. Arch

Bachelor Degree in Architecture

Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico City. 2000 - 2005

The University of Sydney, exchange program. Sydney, Australia. 2003 - 2004. **High Distinction**

Short Courses

CNC Pathway | Autodesk Pier 9, San Francisco | August - November 2017 | Course completed as part of the Artist in Residence program at Autodesk Pier 9, includes CNC technical knowledge, pathway planning and programming using Fusion 360 and technical and practical evaluation of machine use and operation.

Principles of Health and Safety | Cardiff University, 2016 | Course for general health and safety principles and risk assessment guidance.

KUKA Robot Operator, Robot Programming 1 | KUKA College, Wednesbury | 18.04.16 - 22.04.16 | 1 week intensive course on robot operation and programming, certificate B001120

Robotic Vision | Queensland University of Technology | MOOC by Proffesor Peter Corke | 6 weeks intensive course September - December 2015

Digital Painting | Schoolism 2014 | by Bobby Chiu | 4 month intensive course on producing digital painting and conceptual art.

AA Summer D_Lab

Catia and Maya modelling for prototyping and digital manufacturing.

By Shajay Bhooshan and Chikara Inamura. AA School of Architecture, London August 2009.

Interior Design

Summer Intensive Studies Program | Parsons The New School For Design, New York Summer 2007

Software Skills

Construction drawing. Autocad, Microstation, Catia

CAM. Fusion 360, CAMplete

3d modelling. Maya, Rhinoceros, Autocad 3d.

Illustration and graphics. Photoshop, Illustrator, InDesign, Premiere, iMovie

Still frame animation & Rendering. Maya mental ray, Rhinoceros vray, Rhinoceros Bongo, Maxwell, Felix

Robot Language. KUKA KRL and NACHI robot language

Scripting Languages. Grasshopper, Processing (Good) | Python, MATLAB (Beginner)

Machine Expertise

Robotic arms: KUKA KR 60 HA, NACHI MZ07, ABB IRB 6700

CNC: DMS 5-Axis enclosed router, OMAX waterjet cutter 60120, HAAS vertical mill VF-2SS, MATSUURA MX520 5-Axis vertical mill

3D printing: STRATASYS Objet Connex 500, STRATASYS Fortus 450MC, MCOR 3D paper printer,

Laser Cutting: EPILOG laser cutter

Woodshop: General woodshop experience including miter saw, jointer, planner, and router table.

Metal Shop: General metal shop experience including use of vertical band saw, cold saw, horizontal band saw and drill press.

Beginner experience of manual metal lathe.

Professional Experience

Senior Designer | Populous | London July 2011 - February 2015

Concept Design development of proposals and competitions on a number of large and small scale stadia, arenas and motorsport projects primarily in the UK, Middle East and Russia, including: Kuwait Sports City, Circuit of Wales, Dubai Expo 2020 winning masterplan, 2012 Olympic Stadium transformation, Mus-sanah sports city, FFR winning bid.

Lead Designer for Mussanah Sports Complex and Jackie personal arena | Concept development, 3d modelling and rationalization, drawing, renders and model coordination.

Part of the **Parametric Geometry Group** at Populous which aims at rationalising complex geometries and integrating fabrication techniques into their form.

Visiting School Faculty | Architectural Association | 2010, 2012, India, China, Brasil & Mexico - present

Architectural Assitant | Zaha Hadid Architects | London September 2010 - June 2011

Developed design concept of private 3 stories house in Grosvenor Crescent, London.

Developed construction/fabrication documents, and optimization techniques to rationalize diverse areas of Cairo Expo City.

Project Manager | Altiva | Grupo Inmobiliario, Mexico City November 2004 - August 2008

Company leader in the real state development industry in Mexico. | www.grupoaltiva.com.mx

Under the period of time I worked in the firm I dealt with different projects for varying intervals of time as lead interior designer and doing site supervision and on-site project coordination of interiors of the club houses of high-end residential complexes and of some of the apartments inside them as per client request.

The projects are located in different areas of the city. Projects include: Reserva Bezares Club House, Apartments 2, 7 and 9 at Sierra Mojada 450 in Lomas de Chapultepec, Design of residential apartments at Chiapas 61 and Zacatecas 73.

Teaching and Prototyping Experience

Architectural Association | Design Research Laboratory (DRL) | 2015 - present

Course Tutor | master students in architecture | Nahmad - Bhooshan studio. Tasks include: developing and setting the studio brief so that is relevant to the course agenda and the contemporary architectural discourse. Guidance and advise to the students during the topic selection, focus and development of their thesis, including theoretical framework, digital design and fabrication techniques, material advise.

Design Principles and Methods (DPM 2) | Welsh School of Architecture, Cardiff University | 2015 - present

Course Tutor | with Wassim Jabi | 2nd year students. Tasks include: developing and preparing teaching content, developing teaching plan, weekly course lectures, software tutorials, digital fabrication tutorials, marking and assesment, individual student advise, preparing students for jury presentations.

MArch Students | Welsh School of Architecture, Cardiff University | 2016 - present

Thesis Supervisor | Tasks include: guidance and supervision of 5th year students literature review, thesis preparation, research plan and development.

Hyperthreads 2016 and 2017 | Architectural Association Visiting School Sao Paulo, Brazil

Tutor | The workshop will focusing on exploring robotic hotwire cutting and assembly of components using two robots collaboratively. To be co-tutored with Shajay Bhooshan, Vishu Bhooshan and David Reeves. 30 – 40 students expected. 4th - 13th July, 2016

Phriends for Shells, 2016 | IAAC

Tutor and Robot Expert | Invitation from Stephanie Chaltiel, Innocchain PhD candidate, to cotutor this workshop. The workshop focused on robotic spraying of earth on tensile form-found structures. Feedback was introduced to scan and analyze the thickness of the shell after each layer of earth had been applied before applying the subsequential ones. 36 master students. May 9th - 12th, 2016

Instructing Machines, 2015 | Architectural Association

Tutor | Workshop cotutored with Shajay Bhooshan and David Reeves. The workshop focused on introducing students to six-axis industrial robotic arms and design and fabrication through them. The students developed painting and stippling patterns as well as designed and fabricated their own end-effectors for the robot to execute them. Feedback was done through the software interface and the robot GCode commands. 12 master students. 10th November - 12th December, 2015

New Thin Shell Vaults 2014 | KADK and CITA Copenhagen

Invited tutor. Autodesk Maya and Maya nDynamics | Workshop focused on the research for a new techniques to do fabric formed moulds to cast topology optimised structures. A physical mould got built of 6 x 6 metres as well as digital simulations and small prototypes
CoTutored with: Mark West, Asbjorn Sondergaard, Shajay Bhooshan. 30 students. 12th -25th April, 2014.

Hyperthreads 2013 | Zaha Hadid Workshop in Mexico City

Workshop director and Fabrication leader | Zaha Hadid Architects & Tecnologico de Monterrey, Campus Santa Fe.

Design, Rationalisation, production of shop drawings and Build of a 5 x 3 x 6 mts topology optimised shell prototype on concrete. CoTutored with: Chikara Inamura, Shajay Bhooshan, Mustafa El-Sayed, Asbjorn Sondergaard and Joshua Zabel. 18 undergraduate students 23rd August - 1st September, 2013

Hyperthreads 2012 | Architectural Association Visiting School Bangalore, India

Tutor | InCite Gallery, India.

Design and Build of 2 creased shell prototypes on aluminium using curve foldign as generative principle. 30 students, September 2012

Hyperthreads 2011 | Zaha Hadid Workshop in Mexico City

Workshop director and Fabrication leader | Zaha Hadid Architects & Tecnologico de Monterrey, Campus Santa Fe.

Design, Rationalisation, production of shop drawings and Build of a 5 x 7 mts and 6mm thin shell prototype on concrete. 27 students, October 2011

Hyperthreads 2010 | Architectural Association Visiting School Bangalore, India

Tutor and fabrication advisor | BMS College of Engineering, India

Design and Build of a hanging chain prototype using local materials. 32 students, August 2010

Hyperthreads 2010 | Komorebi, Changsha

Tutor and fabrication advisor | Hunan University College of Architecture, Changsha, China

Design and Build of a minimal surface prototype using digital and analogue circle packing methods. 40 students, August - September 2010

Collaborations , Exhibitions & Residences

Autodesk Pier 9

Artist in Residence, Autumn 2017 cohort. Machine Learning concrete forming project developed at the Applied Research Lab at Autodesk Pier 9.

Corn & Coal

Invited artist exhibition, Camaradas, Mexican Embassy in London, 2013 | collaboration with Shajay Bhooshan

Autodesk TED model

Assistant in model making. Exhibited at Autodesk Gallery in San Francisco and as part of the TED conference in Florida, 2010

Kokkugia for Ljubljana, architectural proposal of a commercial space

Exhibited at "EMOH RUO" at Westminster university as part of the London Festival of Architecture, June 2010. Lead Rob Stuart-Smith

Publications

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Nahmad Vazquez A., and Jabi W., 2017. "Investigations in Robotic Assisted Design: Strategies for symbiotic agencies in material-directed generative design processes", International Journal of Architectural Computing (IJAC), Volume 15, Issue 1, pp.70 - 86 2017, SAGE publications. DOI 10.1177/1478077117691626
<http://journals.sagepub.com/doi/full/10.1177/1478077117691626>

Nahmad Vazquez A., and Jabi W., 2017. "RAF :A Framework for symbiotic agencies in Robotic – Aided Fabrication", Charette journal of the association of architectural educators, Volume 4, Number 1, Spring 2017 pp. 58-73
<http://ingentaconnect.com/contentone/arched/char/2017/00000004/00000001/art00006>

Nahmad Vazquez A., and Jabi W., 2017. "Pop-Up Concrete Constructions: Forming Fabric Reinforced Concrete Sheets", International Journal of Computational Methods and Experimental Measurements, Wessex Institute of Technology. Volume 5, Issue 4, 2017, pp. 451 – 463. ISSN: 2046-0546 (paper format), ISSN: 2046-0554 (online), <http://www.witpress.com/journals> . DOI: 10.2495/CMEM-V5-N4-451-463

Nahmad Vazquez A., and Jabi W., 2016. "RAF | A Framework for symbiotic agencies in Robotic – Aided Fabrication". In P. Weber, ed. Proceedings of the International Peer-reviewed Conference on "Research Based Education". The Bartlett School of Architecture, UCL, pp. 130-149
https://issuu.com/bartlettarchucl/docs/aae16_publication_volume1

Nahmad Vazquez A., Jabi W., 2015. "Pop-Up concrete: Digital and Physical materiality", 2015 TxA Emerging Design + Technology Conference Proceedings held during the Texas Society of Architects 76th Annual Convention and Design Expo in Dallas, Texas. Ed. by Kory Bieg. pp 9-17

Nahmad Vazquez A., Jabi W., "A collaborative approach to digital fabrication: A case study for the design and production of concrete pop-up structures", International Journal of Architectural Computing, volume 13 number 2, September 2015.
<http://multi-science.atypon.com/doi/abs/10.1260/1478-0771.13.2.195>

Nahmad Vazquez A., Bhooshan S., Inamura C., Zabel J., Sondergaard A., El Sayed M., "Design, Analysis and Fabrication of Expressive, Efficient Shell Structures : a prototype exploring synergy between architecture, engineering and manufacture" , IAASS I SLTE International Association for Shell Structures, Brasilia,Brasil September 2014
<http://orca.cf.ac.uk/68210/1/PAP315nahmad.pdf>

Nahmad Vazquez A., Bhooshan S., Inamura C., Zabel J., Sondergaard A., El Sayed M., "Topologically optimized shell structure", Annual Conference of the Association for Computer Aided Design in Architecture ACADIA 2014 projects proceedings, USC, Los Angeles, October 2014

Nahmad Vazquez A., Bhooshan S., Brunier K., Zabel J., El Sayed M., "Learning from Candela", Proceedings of the synthetic digital ecologies conference, ACADIA 2012, San Francisco, USA

Hyperthreads 2013 Mexico
<http://expedition.uk.com/main.php>

Learning from candela | Hyperthreads 2011 shell
http://craftengin.com/?post_type=portfolio&p=315
<http://archinect.com/people/project/27907236/zaha-hadid-concrete-shell/35446019>

Lectures and Research Presentations

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September 2016, 5th International Conference on Mobile, Adaptable and Rapidly Assembled Structures, MARAS 2016 organized by the Wessex Institute of Technology and to be held in Sienna, Italy. Peer reviewed selected presentation.

July 2016. 'Spaces of Desire', conference organized by the School of Geography and Planning and the Welsh School of Architecture, to be held at Cardiff University from the 31st of June to the 1st of July 2016. **Conference Chair and Organizer** with Charles Drozynski (WSA), Diana Beljaars and John Clayton (CPLAN)

June, 2016. 'Knowledge into Solutions' Symposium, University of Edinburgh. <https://symposiummx.com/>. Invited lecture.

28th April, 2016. Plexus 23, 'Alliance', monthly event organized by the Bartlett School of Architecture, UCL. Invited lecture

8th April, 2016. 'Research Based Education', International peer reviewed conference held at the Bartlett School of Architecture, London from the 7th – 9th of April, 2016. Peer reviewed selected presentation.

13th November, 2015. ReseARCHI conference at the Welsh School of Architecture, Cardiff University. Invited lecture

6th November 2015. Emerging Design and Technology, TxA Conference held at Dallas, Texas as part of the 76th Annual Convention and Design Expo of the AIA Chapter in Texas held from the 3rd – 7th of November. Peer reviewed selected presentation

24th July, 2015. 'Connecting ideas, building the future' XIII Symposium of Mexican Students and studies, held at the University College London (UCL) from the 23rd to the 25th of July, 2015. <http://www.mexsoc.org.uk/events/annual-symposium/> Peer reviewed selected presentation

31st July, 2015. Design Computing Community, Summer event, at the offices of architecture practice Populous in London. <http://design-computing.com/>. Invited lecture

September 2013, 'Estructuras Generativas', UDEM, Universidad de Monterrey. Invited Lecture

Fluent Languages
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English - Spanish