



RUI DE KLERK

ARCHITECTURE / DESIGN & COMPUTATION

NATIONALITY: Portuguese

DATE OF BIRTH: 27/04/1982

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SHORT BIO

Rui de Klerk holds a MSc degree in Architecture from the Faculty of Architecture, University of Lisbon (FAUL) since 2012 and is currently a PhD Candidate in Design and Computation applied to Architecture at the same Faculty, with a research on Semantic Design Systems with a FCT Doctoral Grant (SFRH/BD/131386/2017).

From June 2016 until September 2017, he was a Research Fellow at the Research Centre for Architecture, Urbanism and Design (CIAUD), at the Faculty of Architecture, University of Lisbon, integrating the research project “Measuring Urbanity: densities and urban performance of extensive urban fabrics. The Portuguese case” (CIAUD_BI_09/ EAT/04008), with an FCT/MEC grant.

From April 2015 to May 2016 he integrated the research project “TECTON 3D – Digital Mockup: Touching the 3rd dimension” (PTDC/EEI-SII/3154/2012) with an FCT grant, working on the development of an application for procedural modelling in immersive virtual reality environments.

During 2013, he worked as a research intern in the project “O Lugar da Villa Renascentista na Arquitectura Portuguesa” coordinated by Professor Amílcar de Gil e Pires (FAUL).

He is also a practicing architect and worked at EMBAIXADA Arquitectura (2013-2014) and Esfera de Imagens (2014-2015), collaborating in the development of national and international projects – from which we can highlight the Honorable Mention in the competition for the new Library of Setúbal and requalification of José Afonso Square (EMBAIXADA Arquitectura, 2013).

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ACADEMIC TRAINING

PhD in Architecture – Field of Computation
Faculty of Architecture, University of Lisbon (ongoing)

Integrated Master in Architecture
Faculty of Architecture, Technical University of Lisbon (2012)

Exchange program at *Fakultät für Architektur und Landschaft*.
Leibniz Universität Hannover (2009-2010)

Graduation in Sciences of Architecture
Faculty of Architecture, Lusíada University of Lisbon (2008)

Frequency of the Mechanical Engineering Graduation
Instituto Superior Técnico (2000 - 2004)

COMPLEMENTARY TRAINING

Web Scrapping / Data Mining / Convex and Solid Voids,
DCG Super Week Workshops – Lisbon, FAUL (2017)

Knowledge Engineering – Lisbon, FCUL (2016)

Parametric Urban Design – Lisbon, FAUL (2014)

Design and Digital Fabrication – Lisbon, FAUL (2014)

Mathematical Fundamentals for Computation – Lisbon, FAUL (2014)

Programming (Racket) – Lisbon, FAUL (2013 - 2014)

Shape Grammars – Lisbon, FAUL (2013)

Introduction to GIS – Lisbon, FAUL (2013)

Space Syntax – Lisbon, FAUL (2013)

Arquibio 2013, Conferences and Workshop (Grasshopper) – Coimbra, FCTUC (2013)

1st eCAADe Regional International Meeting “*Future Traditions*” - Porto, FAUP (2013)

Workshop “*GDP – Generative Design Process*” - Porto, FAUP (2013)

Seminar and Workshop “*Measuring Urbanity*” (QGIS, PostGres, Grasshopper) – Lisbon, FAUTL (2012)

Workshop “*A Living System*” (Rhino 3D, Grasshopper, Arduino, Digital Fabrication) – Lisbon, ISCTE (2012)

Vray for Rhino 3D – Lisbon, Rhino 3D Portugal (2012)

Rhino 3D – Lisbon, Rhino 3D Portugal (2012)

Digital Fabrication Symposium and Workshop – Lisbon, ISCTE (2011)

3D Studio Max 9 (levels 1 e 2) – Lisbon, The Edge (2007)

Autocad 2D – Lisbon; Cenfim (2004)

PROFESSION EXPERIENCE

DATE	COMPANY & FUNCTION	DESCRIPTION
Sep.2017-Present	FAUL, Researcher	PhD research in Design and Computation applied to Architecture at FAUL, with a research on Semantic Design Systems with a FCT Doctoral Grant (SFRH/BD/131386/2017).
Feb.2017-Jun.2017	FAUL, Teaching Assistant	Prof. Beirão's Assistant in the elective course of Parametric Urban Planning.
Jun.2016-Aug.2017	CIAUD, Researcher	Project "Measuring Urbanity: densities and urban performance of extensive urban fabrics. The Portuguese case" (BI_09-EAT-04008): Development of generative, parametric and analytical digital tools to support urban design, combining ontologies and shape grammars; research and production of scientific articles.
Apr.2015 – May 2016	CIAUD, Researcher	Project Tecton 3D "Digital Mockup – Touching the 3rd Dimension" (PTDC/EEI-SII/3154/2012): Development of a prototype for procedural modelling in immersive VR environment; CAD 3D modelling and programming; usability tests; research and production of scientific articles.
Jun.2014 – Apr.2015	Esfera de Imagens, Architect	Architectural Design; construction monitoring; suppliers and logistics; CAD 3D and architectural visualization (rendering).
2013 - 2014	EMBAIXADA Architecture, Architect	Architectural Design; Generative Design; Generative Design; Competitions; CAD 3D and architectural visualization (rendering).
2013	CIAUD, Research Intern	Research in Architecture; organization and participation in the International Conference "A Villa Renascentista – Arquitectura, Jardins e Paisagem".
2008	Atelier Ana Araújo Lda.	Architectural Design; architectural surveying; CAD 2D.
2006	Miguel Mira -Arquitectura e Planeamento Lda., Collab.	Collaboration in the development of ongoing architectural designs; CAD 2D.

PUBLICATIONS

CHAPTERS IN BOOKS

Klerk, Rui de and Beirão, José Nuno, 2017. CIM-St - A Parametric Design System for Street Cross Sections, in Çağdaş, G., Özkar, M., Gül, L. F. & Gürer, E. (Eds.), *Computer-Aided Architectural Design. Future Trajectories: 17th International Conference, CAAD Futures 2017, Istanbul, Turkey, July 12-14, 2017, Selected Papers*, Springer Singapore, pp. 42-59. ISBN 978-981-10-5197-5. https://link.springer.com/chapter/10.1007/978-981-10-5197-5_3

Klerk, Rui de, 2016. A Quinta das Torres - Interpretação e Análise Geométrica da sua Arquitectura. In *O Lugar da Villa Renascentista na Arquitectura Portuguesa: Investigação da Arquitectura da Quinta de Recreio dos Séculos XVI e XVII e sua Contextualização Paisagística e Cultura*". Lisboa: Caleidoscópio - Edição e Artes Gráficas, SA, pp. 233-246. ISBN 978-989-658-377-4.

SCIENTIFIC JOURNAL PAPERS

Klerk, R. de; Duarte, A. M.; Medeiros, D. P.; Duarte, J. P.; Jorge, J.; Lopes, D. S. (forthcoming). Building Early Stage Architectural Models in Virtual Reality, *Automation in Construction*.

CONFERENCE PAPERS

Beirão, José Nuno and de Klerk, Rui (2017), CIM-St - A Design Grammar for Street Cross Sections, Fioravanti, A, Cursi, S, Elahmar, S, Gargaro, S, Loffreda, G, Novembri, G, Trento, A (eds.), *ShoCK! - Sharing Computational Knowledge! - Proceedings of the 35th eCAADe Conference - Volume 2*, Sapienza University of Rome, Rome, Italy, 20-22 September 2017, pp. 619-628. ISBN 978-94-91207-13-6. http://papers.cumincad.org/cgi-bin/works/Show?ecaade2017_155

Klerk, Rui de and Beirão, José, 2016, Ontologies and Shape Grammars - A Relational Overview Towards Semantic Design Systems, in Herneoja, Aulikki; Toni Österlund and Piia Markkanen (eds.), *Complexity & Simplicity - Proceedings of the 34th eCAADe Conference - Volume 2*, University of Oulu, Oulu, Finland, 22-26 August 2016, pp. 305-314. ISBN 978-94-91207-11-2. http://papers.cumincad.org/cgi-bin/works/Show?ecaade2016_217

Mateus, D.; Sousa, M.; Klerk, R. de; Gama, S.; Jorge, J.; Duarte, J. P., 2015. From Tekton to Tekne - going back to the classical roots of architecture using virtual reality, Martens, B, Wurzer, G, Grasl T, Lorenz, WE and Schaffranek, R (eds.), *Real Time - Proceedings of the 33rd eCAADe Conference - Volume 1*, Vienna University of Technology, Vienna, Austria, 16-18 September 2015, pp. 107-116. ISBN 9789491207082. http://papers.cumincad.org/cgi-bin/works/Show?ecaade2015_181

DISSERTATIONS

Mota, Rui Van Zeller de Klerk, 2012 - Arquitectura algorítmica aplicada à habitação em Port-au-Prince, Haiti. Um sistema de projecto. Lisboa: FA, 2012. Tese de Mestrado. <http://www.repository.utl.pt/handle/10400.5/5804>

REPORTS

Jorge, J., Duarte, J., Lopes, D., Costa, E. Mateus, D., Klerk, R., Bruno, L., Sousa, M., 2016. Tecton 3D Digital Mockup: Touching the 3rd Dimension Final Report, INESC-ID TechReport, vimmi/02/2016. <http://web.tecnico.ulisboa.pt/jorgej/papers/tecton3d-report.pdf>

CONFERENCES

DATE & PLACE	TITLE
2018, April, Porto CESAP	<i>"All bottles from one design: Semantics in design generation using ontologies to control shape generation"</i>
2017, October, Lisbon FACULTY OF ARCHITECTURE (UL)	<i>"Ontologies Using OWL"</i>
2017, September, Italy SAPIENZA UNIVERSITY OF ROME	<i>"CIM-St – A Design Grammar for Street Cross Sections"</i>
2017, February, Lisbon FACULTY OF ARCHITECTURE (UL)	<i>"Ontologies and Shape Grammars in the generation of street profiles"</i>
2016, August, Finland OULU SCHOOL OF ARCHITECTURE	<i>"Ontologies and Shape Grammars: a relational overview towards semantic design systems"</i>
2016, May, Lisbon FACULTY OF ARCHITECTURE (UL)	<i>"Interactive Concept Modeling: The Maquetteer Case Study"</i> - Daniel S. Lopes (INESC-ID) + Rui de Klerk (FAUL)
2016, May, Lisbon FACULTY OF ARCHITECTURE (UL)	<i>"Back to the Roots: towards a new approach to Architecture through Virtual Reality"</i> - Prof. José P. Duarte + Daniel Mateus + Eduardo C. Costa + Rui de Klerk (FAUL)
2013, December, Lisbon FACULTY OF ARCHITECTURE (UL)	<i>"Quinta das Torres – Interpretação e Análise do Seu Desenho através de Gramáticas da Forma"</i>
2013, May, Coimbra FACULTY OF SCIENCES AND TECHNOLOGY (UC)	<i>"Vernacular-Based Design Systems: an alternative for the reconstruction of Port-au-Prince, Haiti"</i>

CONFERENCE/WORKSHOP ORGANIZATION

DATE & PLACE

DESCRIPTION

2018, June, Lisbon

LDAC2019 - 7th Linked Data in Architecture and Construction Workshop, organized by Rui de Klerk and Prof. José Nuno Beirão (local organization) with María Poveda Villalón, Kris McGlenn, Jakob Beetz, Seppo Törmä, Ana Roxin and Pieter Pauwels (LDAC organization). The LDAC workshop series provides a focused overview on technical and applied research on the usage of semantic web, linked data and web of data technologies for architecture and construction (design, engineering, construction, operation, etc.).

<http://linkedbuildingdata.net/ldac2019/>

2018, June/July, Lisbon
FACULTY OF ARCHITECTURE (UL)

Design Computing Summer School 2018, organized by the Design and Computation Group (DCG), consisting of four workshops in the field of design computing: #1 Structural Weaving; #2 Immersive and Responsive Environments; #3 Web-Scraping and Data Mining & #4 Capturing Walkability. Besides being part of the organization team, will also be an instructor in workshops #1 and #2.

<http://dcgsummerschool2018.fa.ulisboa.pt/>

2017, October, Lisbon
FACULTY OF ARCHITECTURE (UL)

Ontologies Using OWL, closing workshop of the **DCG Super Week Workshops**, with the collaboration of Prof. Paulo Urbano (FCUL). The workshop introduced its participants to the world of sharable knowledge representation using semantic web technologies and how these tools may be used to introduce a semantic dimension into their projects. Participants learnt the basic mechanisms how to create ontologies in OWL (Web Ontology Language) using Protégé ontology editor.

2017, May, Lisbon
FACULTY OF ARCHITECTURE (UL)

Closing workshop of the research project **TECTON3D: Digital Mockup: Touching the 3rd dimension** [PTDC / EEI-SII / 3154/2012], consisting of modelling experiments, a series of lectures, a discussion panel, and the Digital Alberti exhibition.

<https://tecton3d.wordpress.com/2016/05/25/closing-workshop/>

2016 to present date, Lisbon
FACULTY OF ARCHITECTURE (UL)

DCG lectures (<http://dcg.fa.utl.pt/lectures/>), held by the Design and Computation Group (DCG) of the Faculty of Architecture, University of Lisbon. These lectures are held on a regular basis at the Faculty of Architecture, University of Lisbon, bringing researchers and students on the field of design and computation together to present their work, followed by a debate.

1st semester of 2004, Lisbon
IST (TU Lisbon)

17th Jobshop AEIST, a job fair held by the Students Association of Instituto Superior Técnico (former TU Lisbon) with the participation of dozens of enterprises. Parallel to the job fair, Rui de Klerk also organized a conference cycle where some of the enterprises would present themselves to the academic community, closing with a large conference entitled “**The other face of Engineering**”, moderated by Dr. Fernando Ramôa Ribeiro (1945-2011) and with the honourable presence of Dr. Maria de Lourdes Pintasilgo (1930-2004), among other guests from different fields.

PARTICIPATION IN REFERENCE PROJECTS – ARCHITECTURE

ENTITY	DESIGNATION
FA (UL)	1st Prize– Digital Design of Sofalca Pavilion for FA (UL).
EMBAIXADA	Honourable Mention – Setúbal Library and requalification of José Afonso square. <i>Concurso Público – Largo José Afonso, Setúbal, Portugal – 2013</i> https://divisare.com/projects/233979-embaixada-arguitectura-setubal-public-library

TEACHING EXPERIENCE

DATE	COMPANY & FUNCTION	DESCRIPTION
Jun.2018	FAUL, Workshop Instructor	Instructor of the <i>Structural Weaving</i> workshop of the <i>Design Computing Summer School 2018</i> . http://dcgsummerschool2018.fa.ulisboa.pt/index.php/structural-weaving/
Jun.2018	FAUL, Workshop Instructor	Instructor of the <i>Immersive and Responsive - Performative Architectural Design in Mixed Reality</i> workshop of the <i>Design Computing Summer School 2018</i> . http://dcgsummerschool2018.fa.ulisboa.pt/index.php/immersive-and-responsive/
Feb.2017-Jun. 2017	FAUL, Teaching Assistant	Prof. Beirão's Assistant in the elective course of Parametric Urban Planning.
2013-Present	Tutor	Tutor assistance on subjects related to design computing (3D modelling, parametric/generative design, parametric urban planning, etc.) to graduation and post-graduation students.
2012-2016	Tutor	Tutor of Mathematics (5 th , 6 th , 7 th , 8 th and 9 th grades).
2000-2016	Tutor	Tutor of Descriptive Geometry (10 th , 11 th and 12 th grades).
2004-2008	Tutor	Tutor of Geometry (university level).

TECHNICAL COMPETENCES

CAD 2D / 3D

- . Autocad
- . Rhino 3D
- . Sketchup

PROGRAMMING

- . Python
- . C#
- . Grasshopper 3D
- . Lisp (Racket)
- . Jess
- . RDF / OWL
- . XML / HTML / CSS

IMAGE

- . Photoshop
- . Illustrator
- . InDesign

GIS

- . ArcGis
- . QGIS

3D VISUALIZATION

- . Unity 3D
- . 3DS Max
- . V-Ray

Other: City Maker (CIM); Protégé; pgAdmin/SQL; Galápagos & Slingshot (Grasshopper); WebVR; MS Office; Wordpress; Prezi; Digital Fabrication.

SOCIAL COMPETENCES

- . Multidisciplinary and proactive;
- . Good relationship and communication skills;
- . Dedicated and motivated.
- . Team spirit;

LINGUISTIC COMPETENCES

ENGLISH: Reading – A; Oral – A; Written – A
FRENCH: Reading – I; Oral – I; Written – I
SPANISH: Reading – I; Oral – I; Written – I
GERMAN: Reading – B; Oral – B; Written – B

N – Native | A – Advanced | I - Intermediate | B - Basic