Renato Carlos F. **Duarte**

Assistant Professor of Cognitive Artificial Intelligence

Donders Institute for Brain, Cognition and Behavior, Radboud University, Nijmegen, Netherlands

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Education

Albert-Ludwigs-Universität, Faculty of Biology (host)

Freiburg, Germany

European Study Program in Neuroinformatics and Computational Neuroscience (EuroSPIN) - Joint PhD degree — *Sep. 2011 - May 2018*

- Dissertation: *State-dependent processing in spiking neural networks*
- Advisor: Prof. Dr. Abigail Morrison
- Honours: *Summa cum laude*
- Relevant Coursework: Computational Neuroscience, Simulating Biological Neural Networks, Introduction to Scientific Programming in Python

University of Edinburgh, School of Informatics (partner)

Edinburgh, United Kingdom

European Study Program in Neuroinformatics and Computational Neuroscience (EuroSPIN) - Joint PhD degree — *Jun. 2012 - Jan. 2013*

- Advisor: Prof. Dr. Peggy Seriès
- Relevant Coursework: Probabilistic Modelling and Reasoning, Information Theory, Advanced Natural Language Processing

University of Algarve, Faculty of Human and Social Sciences

Faro, Portugal

M.Sc. in Cognitive Neuroscience and Neuropsychology — *Sep. 2009 - Aug. 2011*

- Dissertation: *Self-organized sequence processing in recurrent neural networks with multiple interacting plasticity mechanisms*
- Advisor: Prof. Dr. Karl Magnus Petersson
- Honours: *Distinction* (17/20)
- Relevant Coursework: Cognitive Neuroscience, Neuroimaging Methods, Neuropsychiatry and Neuropharmacology, Developmental Cognitive Neuroscience and Neuroplasticity, Nervous System Pathologies, Cognitive Psychology

University of Coimbra, Faculty of Pharmacy

Coimbra, Portugal

B.Sc. in Pharmaceutical Science — *Oct. 2002 - Jun. 2009*

- Relevant Coursework: Biochemistry, Pharmacology, Molecular Cell Biology, Anatomophysiology, Embryology, Histology

Positions & Scientific Appointments

Radboud University

Nijmegen, Netherlands

Assistant Professor — *Oct. 2021 - Present*

- *Artificial Cognitive Systems*, Donders Institute for Brain, Cognition and Behavior

Forschungszentrum Jülich (FZJ)

Jülich, Germany

Postdoctoral Researcher — *Jun. 2018 - Sep. 2021*

- *Computation in Neural Circuits (CiNC)*, Institute of Neuroscience and Medicine (INM-6), Institute for Advanced Simulation (IAS-6) and JARA-Institute Brain Structure Function Relationship (JBI 1 / INM-10)

Forschungszentrum Jülich (FZJ)

Jülich, Germany

Doctoral researcher — *Jul. 2014 - May 2018*

- *Computation in Neural Circuits (CiNC)*, Institute of Neuroscience and Medicine (INM-6), Institute for Advanced Simulation (IAS-6) and JARA-Institute Brain Structure Function Relationship (JBI 1 / INM-10)

Ruhr-Universität Bochum

Bochum, Germany

Doctoral researcher — *Jan. 2013 - Jun. 2014*

- *Institute of Cognitive Neuroscience (IKN)*, Department of Psychology

University of Edinburgh

Edinburgh, UK

Doctoral Researcher — *Aug. 2012 - Jan. 2013*

- *Institute for Adaptive and Neural Computation*, School of Informatics
- Mobility period at the partner institution within the EuroSPIN PhD Program

Albert-Ludwigs-Universität

Freiburg, Germany

Doctoral Researcher — *Oct. 2011 - Jul. 2012*

- *Bernstein Center Freiburg (BCF)* and *Institute for Microsystems Technology (IMTEK)*, Faculty of Biology
- Host institution within the EuroSPIN PhD Program

University of Algarve *Faro, Portugal*

Research Assistant *Oct. 2010 - Sep. 2011*

- *Cognitive Neuroscience Research Group*, Center for Biomedical Research (CBMR), Faculty of Human and Social Sciences, Department of Psychology

Presentations

Oral

NII Shonan Symposium no. 141: *Language as Goal-Directed Sequential Behavior: Computational Theories, Brain Mechanisms, Evolutionary Roots* *Kanagawa, Japan*

State-dependent processing in Spiking Neural Networks *May 2019*

Center for Biomedical Research (CBMR) Distinguished Seminars *Faro, Portugal*

State-dependent processing in Spiking Neural Networks *May 2018*

Institute for Advanced Simulation (IAS) Retreat *Jülich, Germany*

Leveraging heterogeneity for neural computation with fading memory *Dec. 2016*

Institute for Neuroscience and Medicine (INM) Retreat *Jülich, Germany*

Decision-specific sequences of neural activity in balanced random networks driven by structured sensory input *Jul. 2016*

5th EuroSPIN Workshop *Stockholm, Sweden*

Synaptic adaptation stabilizes sequential stimulus representations *May 2015*

7th International Workshop on *Guided Self-Organization* *Freiburg, Germany*

Synaptic adaptation stabilizes sequential stimulus representations *Dec. 2014*

36th Annual Conference of the Cognitive Science Society *Quebéc, Canada*

Self-Organized Artificial Grammar Learning in Spiking Neural Networks *Jul. 2014*

Osnabrück Computational Cognition Alliance Meeting on *The Brain as a Self-Organized Dynamical System* *Osnabrück, Germany*

Syntax processing properties of generic cortical cirucuits *May 2013*

EuroSPIN/NeuroTime Workshop *Beuggen, Germany*

Processing structured symbolic sequences with recurrent neural networks *Jan. 2013*

Poster

International Joint Conference on Neural Networks (IJCNN) *Rio de Janeiro, Brazil*

Encoding Symbolic sequences with Spiking Neural Reservoirs *Jul. 2018*

Neural Coding, Computation and Dynamics (NCCD) *Capbreton, France*

Leveraging heterogeneity for neural computation with fading memory in layer 2/3 cortical microcircuits *Sep. 2017*

Integrated Systems Neuroscience (ISN) *Manchester, UK*

Leveraging heterogeneity for neural computation with fading memory in layer 2/3 cortical microcircuits *Sep. 2017*

24th Annual Computational Neuroscience Meeting (CNS 2015) *Prague, Czech Republic*

ROS-MUSIC toolchain for spiking neural network simulations in a robotic environment *Jul. 2015*

Human Brain Project Workshop: *Stochastic Neural Computation* *Paris, France*

Dynamic stimulus representations in adapting neuronal networks *Nov. 2014*

Donders Discussions *Nijmegen, Netherlands*

Temporal sequence learning via adaptation in biologically plausible spiking neural networks *Nov. 2014*

Bernstein Conference 2014 *Göttingen, Germany*

Temporal sequence learning via adaptation in biologically plausible spiking neural networks *Sep. 2014*

23rd Annual Computational Neuroscience Meeting (CNS 2014) *Quebéc, Canada*

Temporal sequence learning via adaptation in biologically plausible spiking neural networks *Aug. 2014*

BCCN Freiburg conference: *Dynamics of neuronal systems* *Freiburg, Germany*

Syntax processing properties of generic cortical cirucuits *Mar. 2013*

22nd Annual Computational Neuroscience Meeting (CNS 2014) *Paris, France*

Syntax processing properties of generic cortical cirucuits *Jun. 2013*

Teaching & Mentorship

Lecturer / Tutor

2022-	**Reinforcement Learning**, Department of Artificial Intelligence, Faculty of Social Sciences, Radboud University
2021-	**Neural Information Processing Systems (NeurIPS)**, Department of Artificial Intelligence, Faculty of Social Sciences, Radboud University
2020-	**Neuro-inspired Computing**, Department of Computer Science, RWTH Aachen University
2021	**Fall School in Computational Neuroscience**, European Institute for Theoretical Neuroscience (EITN)
2020	**New interfaces for teaching with NEST: hands-on with the NEST Desktop GUI and NESTML code generation**, 29th Annual Computational Neuroscience meeting (CNS2020)
2019-2020	**Spring School in Computational Neuroscience**, European Institute for Theoretical Neuroscience (EITN)
2013-2015	**Introduction to Scientific Programming in Python**, Department of Psychology, Ruhr-Universität Bochum
2014-2015	**Biological Neural Network Simulation**, Bernstein Center Freiburg
2012-2013	**Cognitive Psychology Seminars**, Bernstein Center Freiburg

Academic Supervision

2020-2021	**MSc Student**, Mahdi Enan
2019-2020	**MSc Student**, Nishant Joshi
2015-2020	**PhD Student**, Philipp Weidel
2018-2021	**PhD Student**, Barna Zajzon
2018-2021	**PhD Student**, Tobias Shulte to Brinke
2019	**Internship**, Minseok Kang
2017-2018	**MSc Student**, Barna Zajzon
2015-2016	**Internship**, Sepehr Mahmoudian

Honours & Awards

2020	**Umbrella Award on *Life Science and Engineering; Data Analytics, NeuroScience and Multiscale Approaches and Applications***, Israel Institute of Technology (Technion), RWTH Aachen University and Forschungszentrum Jülich
2019-2021	**Principal Investigator (PI) in Computing Time Grants 15833**, *Functional neural architectures*, Jülich Supercomputing Center (JSC)
2018	***Summa cum laude* for doctoral dissertation**, Albert-Ludwigs-Universität, Faculty of Biology
2015-2017	**Principal Investigator (PI) in Computing Time Grants 10438 and 11225**, *Synaptic timescales and online processing memory*, Jülich Supercomputing Center (JSC)
2011	**EuroSPIN PhD Fellowship**, Erasmus Mundus Joint Doctoral Programme in Neuroinformatics and Computational Neuroscience

Service & Outreach

2012	**Organizer & Moderator**, iCoNet PhD Conference 2012, Bernstein Center Freiburg
	Reviewer, PLoS Computational Biology (12x)
	Reviewer, Brain Structure and Function (1x)