



R. V. Williams-García

Curriculum Vitae

Nationality: American (authorised to work in France)

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in rwwgarcia

Skills

Sciences: physical sciences (complex systems, neural networks, statistical physics, quantum mechanics), mathematics (differential equations, linear algebra, nonlinear dynamics and chaos, statistics)

Research: theoretical models, development of new tools and methods, proposal and management of projects

Measurement & Analysis: data acquisition and signal processing (LabView), data management & visualization (Matplotlib, NumPy, PyTorch, Pandas, Scikit-Learn, Seaborn, SQL), modeling and simulation (Simpack, Simulink), design and implementation of data pipelines and numerical algorithms, interpretation of results

Computer programming: C/C++, Python, HTML & CSS, Java, Javascript, LabView, Mathematica, MATLAB

Communication: writing technical reports and scientific articles (L^AT_EX), editing and peer review, organization of presentations and conferences (Complex Systems in Neuroscience), English and Spanish (native), French (C1)

Teaching: directed lessons and lab work at the university level; design of new course materials

Professional experiences

Associate Digital Engineer, Capgemini Engineering (Paris, France), 2024–present
Profiling of Java code, characterization of Capella/XML file complexity, implementation of FMI between Dymola and Simulink (Java, Python).

Associate Products & Systems Engineer, Capgemini Engineering (Paris, France), 2023
Development of 3DExperience widgets (HTML & CSS, Java, Javascript).

Invited researcher, CNRS, Institut Denis Poisson, Université de Tours, 2020–2022
Simulation of neural network models, calculation of Lyapunov exponents, probability distributions, and bifurcation patterns (C++, Mathematica, MATLAB).

Postdoctoral fellow, École Normale Supérieure (France) and IUPUI (United States), 2020
Simulation of cortico-basal interactions using dynamic networks (MATLAB).

Postdoctoral associate, University of Pittsburgh, 2016–2019
Numerical integration of differential equations and calculation of statistical properties of neural network models using Monte Carlo methods. Development of algorithms to establish causal links between neuronal activations (MATLAB, Python).

Teaching assistant, Indiana University Bloomington, 2009–2014

Education

POEI, Développeur PLM 3DExperience, Mzi Formation, 2023
Algorithms, HTML/CSS/Javascript, Visual Studio, VB.net, SQL, Java, UML, EKL, & 3DExperience.

PhD, Physics, Indiana University Bloomington, 2012–2016
Thesis title : “Phase transitions in living neural networks”.

MS, Physics, Indiana University Bloomington, 2008–2010
Focus in Condensed Matter Physics and Mathematical Physics.

BS, Physics, University of California Los Angeles, 2003–2006

Publications

L. J. Fosque et al., *Frontiers in Computational Neuroscience*, vol. **16**, p. 1037550 (2022).

R. V. Williams-García & S. Nicolis, *Chaos, Solitons & Fractals*, vol. **165**, p. 112739 (2022).

R. V. Williams-García et al., *Physical Review Letters*, vol. **126**, p. 098101 (2021).

R. V. Williams-García et al., *Europhysics Letters*, vol. **119**, p. 18003 (2017).

R. V. Williams-García. Doctoral thesis, Indiana University Bloomington, 2016.

R. V. Williams-García, et al., *Physical Review E*, vol. **90**, p. 062714 (2014).