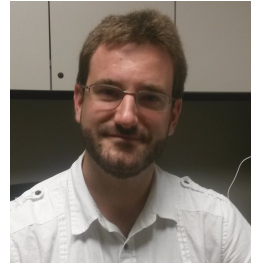


CURRICULUM VITAE

Goñi Cortes, Joaquín

Last name, First name



Affiliations and official addresses:

Associate Research Scientist
Indiana University Network Science Institute (IUNI)

Adjunct Assistant Research Professor of Radiology and Imaging Sciences
Indiana University

Member of the Center for Neuroimaging and of the Indiana Alzheimer Disease Center.
Indiana University.

jgonicor@indiana.edu

IU Health Neuroscience Center.

355 W 16th St, Indianapolis, IN 46202. Suite # 4100.

cell: (+1) 812 650 2688

office: (+1) 317 962 3999

Date and place of birth: January, 1978. Pamplona, Spain

Nationality: Spanish

Education

Institution and Location	Degree	Year	Field of Study
School of Informatics, University of the Basque Country, Spain	B.S	2003	Computer Engineering
School of Informatics, University of the Basque Country, Spain	M.S	2005	Computer Science
Dept. of Physics and Applied Mathematics, Univ. of Navarra, Spain	Ph.D	2008	Complex Systems in Neuroscience

Career/Employment

- 2014 - Associate Research Scientist at the Indiana University Network Science Institute (Indianapolis, IN)
- 2014 - Adjunct Assistant Research Professor of Radiology and Imaging Sciences (Indianapolis, IN)
- 2014 - 2014 Assistant Research Scientist at Psychological and Brain Sciences, Indiana University (Bloomington, IN).
- 2011 - 2014 Research Associate at Psychological and Brain Sciences, Indiana University (Bloomington, IN).
- 2009 - 2011 Post-doctoral fellow at the Center for Applied Medical Research (Pamplona, Spain).
- 2006 – 2008 Pre-doctoral fellow at University of Navarra (Pamplona, Spain).
- 2004 – 2005 Pre-doctoral fellow at the Center for Applied Medical Research (Pamplona, Spain).

Specialization

Complex systems and Computational Neuroscience. Application of a wide variety of frameworks including network theory, information theory, Markov chains, and Machine Learning to Neuroscience, specially to neuroimaging studies and to cognitive processes. Development of theoretical contributions for a better understanding of complex systems.

Thesis title: *Conceptual organization and retrieval in semantic memory: the differential role of switching and clustering, acquisition and impairment in neurodegenerative conditions.*

Languages: Spanish (native) and English fluent.

Computer skills: Windows / Linux / Mac / Clusters. High skills in Matlab. Mid skills in C,C++ and in other languages.

Profiles:

Research Gate: www.researchgate.net/profile/Joaquin_Goni/

LinkedIn: <https://www.linkedin.com/pub/joqu%C3%ADn-go%C3%B1i/10/ba6/aa3>

Google Citations: <http://scholar.google.com/citations?user=K3bp04sAAAAJ&hl=en>

Papers

Published / in press /accepted papers (citations according to Scopus database)

39. *Hubs and Pathways* (2014). J Sepulcre, MR Sabuncu, **J Goñi**. **Brain Mapping: An Encyclopedic Reference**. 23. Elsevier. Eds M Mesulam and S Kastner. *Accepted*. Citations: 0.
38. *Changes in structural and functional connectivity among resting-state networks across the human lifespan* (2014). RF Betzel, L Byrge, Y He, **J Goñi**, XN Zuo, O Sporns. **NeuroImage**. *Accepted*. Citations: 0.
37. *Multiscale Integration and Predictability in Resting State Brain Activity* (2014). A Kolchinsky, MP van den Heuvel, A Griffa, P Hagmann, LM Rocha, O Sporns, **J Goñi**, **Frontiers in Neuroinformatics** – Special Issue “Information-based methods for neuroimaging: analyzing structure, function and dynamics”. *Accepted*. Citations: 0.
36. *Using Pareto Optimality to Explore the Topology and Dynamics of the Human Connectome* (2014). A Avena-Koenigsberger, **J Goñi**, RF Betzel, MP van den Heuvel, A Griffa, P Hagmann, JP Thiran, O Sporns. **Phil. Trans. R. Soc. B**. *Accepted*. Citations: 0.
35. *Resting Brain Functional Connectivity Predicted by Analytic Measures of Network Communication* (2014). **J Goñi**, MP van den Heuvel, A Avena-Koenigsberger, N Velez de Mendizabal, RF Betzel, A Griffa, P Hagmann, B Corominas-Murtra, JP Thiran, O Sporns. **Proc Natl Acad Sci USA** 111(2):833-8. Citations: 5.
34. *Multi-scale community organization of the human structural connectome and its relationship with resting-state functional connectivity* (2013). RF Betzel, A Griffa, A Avena-Koenigsberger, **J Goñi**, JP Thiran, P Hagmann, O Sporns. **Network Science** 1(3):353-373. Available in arXiv: <http://arxiv.org/abs/1304.0485>. Citations: 0.
33. *Predicting Relapsing-Remitting Dynamics in Multiple Sclerosis Using Discrete Distribution Models: a Population Approach* (2013) N Velez de Mendizabal, MM Hutmacher, IF Troconiz, **J Goñi**, P Villoslada, F Bagnato, RR Bies. **PLoS ONE** 8(9): e73361. Citations: 0.
32. *Robust estimation of fractal measures for characterizing the structural complexity of the human brain: optimization and reproducibility* (2013). **J. Goñi**, O. Sporns, H Cheng, M Aznárez-Sanado, Y Wang, S Josa, G Arrondo, VP Mathews, TA Hummer, WG Kronenberger, A Avena-Koenigsberger, AJ Saykin, MA Pastor. **NeuroImage** 83, 646-657. Citations: 0.
31. *On the origins of hierarchy in complex networks* (2013) B Corominas-Murtra, **J Goñi**, RV Solé, C Rodríguez-Caso. **Proc Natl Acad Sci USA** 110(33):13316-21. Citations: 1.
30. *Exploring the Morphospace of Communication Efficiency in Complex Networks* (2013) **J Goñi**, A Avena-Koenigsberger, N Velez de Mendizabal, MP van den Heuvel, R Betzel, O Sporns. **PLoS ONE** 8(3):e58070. Citations: 6.
29. *Abnormal rich club organization and functional brain dynamics in schizophrenia* (2013). MP van den Heuvel, O Sporns, G Collin, T Scheewe, RCW Mandl, W Cahn, **J Goñi**, HE Hulshoff Pol and RS Kahn. **JAMA Psychiatry** 70(8):783-92. Citations: 28.
Paper featured at: From Lichtheim to Rich Club. Brain Networks and Psychiatry (2013). E Bullmore, P. Vertes. **JAMA Psychiatry**.
28. *Selective brain gray matter atrophy associated with APOE ϵ 4 and MAPT H1 in subjects with mild cognitive impairment*. (2013). **J Goñi**, S Cervantes, G Arrondo, P Pastor, MA Pastor. **J Alzheimer Dis** 33(4):1009-19. Citations: 2.
27. *High-Cost, High-Capacity Backbone for Global Brain Communication* (2012). MP van den Heuvel, RS Kahn, **J Goñi**, O Sporns. **Proc Natl Acad Sci USA** 109(28):11372-7. Citations: 64.
26. *A new kinetic framework for synaptic vesicle trafficking tested in synapsin knock-outs* (2011). T Gabriel, E García-Pérez, K Mahfooz, **J Goñi**, R Martínez-Turrillas, I Pérez-Otaño, DC Lo, JF Wesseling. **J Neurosci** 31(32):11563-77. Citations: 8.
25. *Modeling the effector - regulatory T cell cross-regulation reveals the intrinsic character of relapses in Multiple Sclerosis* (2011) N Velez de Mendizabal, J Carneiro, RV Solé, **J Goñi**, J Bragard, I Martinez-Forero, S Martinez-Pasamar, J Sepulcre, J Torrealdea, F Bagnato, J Garcia-Ojalvo, P Villoslada. **BMC Syst Biol** 5:114. Citations: 8.
24. *Computational classifiers for predicting the short-term course of Multiple sclerosis* (2011). B Bejarano, M Bianco, D Gonzalez-Moron, J Sepulcre, **J Goñi**, J Arcocha, O Soto, U Del Carro, G Comi, L Leocani, P Villoslada. **BMC Neurol** 11:67. Citations: 12.
23. *Measuring the hierarchy of feedforward networks* (2011) B Corominas-Murtra, C Rodríguez-Caso, **J Goñi**, RV Solé. **Chaos** 21(1) 016108. Available at arXiv: <http://arxiv.org/abs/1011.4394>. Citations: 3.

22. *The neural substrate and functional integration of uncertainty in decision making: an information theory approach* (2011). **J Goñi**, M Aznárez-Sanado, G Arrondo, M Fernández-Seara, FR Loayza, FH Heukamp, MA Pastor. **PLoS ONE** 6(3): e17408. Citations: 7.
21. *The semantic organization of the animal category: evidence from semantic verbal fluency and network theory* (2011). **J Goñi**, G Arrondo, J Sepulcre, I Martincorena, N Vélez de Mendizabal, B Corominas-Murtra, B Bejarano, S Ardanza-Trevijano, H Peraita, DP Wall, P Villoslada. **Cognitive Processing** 12(2),183-196. Citations: 8.
20. *Exploring the randomness of directed acyclic networks* (2010). **J Goñi**, B Corominas-Murtra, RV Solé, C Rodríguez-Caso. **Physical Review E**. 82, 066115. Available at arXiv: <http://arxiv.org/abs/1006.2307>. Citations: 3.
19. *Topological reversibility and causality in feed-forward networks* (2010). B Corominas-Murtra, C Rodríguez-Caso, **J Goñi**, RV Solé. **New Journal of Physics** 12, 113051. Available at arXiv: <http://arxiv.org/abs/1007.1829>. Citations: 4.
18. *Lexical access changes in patients with Multiple Sclerosis. A 2-year follow-up study* (2010) J Sepulcre, H Peraita, **J Goñi**, B Duque, G Arrondo, I Martincorena, B Duque, N Vélez de Mendizabal, JC Masdeu, P Villoslada. **J Clin Exp Neuropsychol** 33(2),169. Citations: 1.
17. *Switcher-random-walks: a cognitive-inspired mechanism for network exploration.* (2010) **J Goñi**, I Martincorena, B Corominas-Murtra, G Arrondo, S Ardanza-Trevijano, P Villoslada. **Int J Bifurcat Chaos** 20(3):913-922. Citations: 8.
16. *Brain pathways of verbal working memory: A lesion-function correlation study.* (2009) J Sepulcre, JC Masdeu, MA Pastor, **J Goñi**, C Barbosa, B Bejarano, P Villoslada. **Neuroimage** 47(2):773-8. Citations: 19.
15. *Morphology from Texture in Cytometry* (2009) L. Peshkin, **J Goñi**, A Loewer, RS Kolluri, G Lahav, DP Wall, **Int J of Tomography & Statistics** 16, Issue No. S10 56-67. Citations: 0.
14. *Allele-specific gene expression is widespread across the genome and biological processes* (2009) R Palacios*, E Gazave*, **J Goñi**, G Piedrafita, O Fernando, A Navarro, P Villoslada. **PLoS ONE** 4(1): e4150. * equal contribution. Citations: 28.
13. *Fractal dimension analysis of grey matter in multiple sclerosis* (2009) FJ Esteban, J Sepulcre, J Ruiz de Miras, J Navas, N Vélez de Mendizabal, **J Goñi**, JM Quesada, B Bejarano, P Villoslada. **Journal of the Neurological Sciences** 282(1-2):67-71. Citations: 18.
12. *Contribution of white matter lesions to gray matter atrophy in Multiple Sclerosis. Evidence from voxel-based analysis of T1 lesions in the visual pathway* (2009) J Sepulcre, **J Goñi**, B Bejarano, N Vélez de Mendizabal, JB Toledo, JC Masdeu, P Villoslada. **Archives of Neurology** 66(2):173-179. Citations: 40.
11. *Comparative analysis of neurological disorders focuses genome-wide search for autism genes* (2008) FJ Esteban, TF DeLuca, M Huyck, T Monaghan, N Vélez de Mendizabal, **J Goñi**, IS Kohane, DP Wall. **Genomics** 93(2):120-9. Citations: 21.
10. *Fatigue in multiple sclerosis is associated with the disruption of frontal and parietal pathways* (2008) J Sepulcre, JC Masdeu, **J Goñi**, G Arrondo, N Vélez de Mendizabal, B Bejarano, P Villoslada. **Multiple Sclerosis** 15(3):337-44. Citations: 41.
09. *Goals and pitfalls of gene network inference methods: a comparative study from virtual microarrays and network dynamics.* (2008) **J Goñi***, C Rodríguez-Caso*, RV Solé, P Villoslada, A Munteanu. **Net-works International Conference 2008**. ISBN: 978-84-691-3819-9, pages 91-97.
08. *Switcher random walkers: cognitive inspired strategies for an optimized random exploration of networks.* (2008) **J Goñi***, I Martincorena*, G Arrondo, J Sepulcre, N Vélez de Mendizabal, B Bejarano, DP Wall, S Ardanza-Trevijano, P Villoslada. **Net-works International Conference 2008**. ISBN: 978-84-691-3819-9, pages 83-89.
07. *Mapping the brain pathways of declarative verbal memory. Evidence from white matter lesions in the living human brain* (2008) J Sepulcre, JC Masdeu, J Sastre-Garriga, **J Goñi**, N Vélez de Mendizabal, B Duque, MA Pastor, B Bejarano and P Villoslada. **Neuroimage** 42(3):1237-43. Citations: 29.
06. *A computational analysis of the protein-protein interaction networks in neurodegenerative diseases* (2008) **J Goñi**, FJ Esteban, N Velez de Mendizabal, J Sepulcre, I Agirrezabal, S Ardanza-Trevijano, P Villoslada. **BMC Systems Biology** 2:52. Citations: 39.
05. *HLA-DR2 and white matter lesion distribution in MS.* (2008) J Sepulcre, JC Masdeu, R Palacios, **J Goñi**, B Moreno, M Tainta, B Bejarano, P Villoslada. (2008) **Journal of Neuroimaging** 18(3):328-31. Citations: 4.

04. A Network Analysis of the Human T-Cell Activation Gene Network Identifies Jagged1 as a Therapeutic Target for Autoimmune Diseases (2007) R Palacios, **J Goñi**, I Martínez-Forero, J Iranzo, J Sepulcre, I Melero, P Villoslada. (2007). **PLoS ONE** 2(11): e1222. Citations: 25.

03. Fractal dimension and white-matter changes in multiple sclerosis. (2007) FJ Esteban, J Sepulcre, N Vélez de Mendizábal, **J Goñi**, J Navas, J Ruiz de Miras, B Bejarano, P Villoslada, **NeuroImage** 36(3):543-9. Citations: 33.

02. Protein interaction network analysis reveals the importance of proteins with low degree of connectivity in neurodegenerative diseases. (2006). **J Goñi**, FJ Esteban, N Vélez de Mendizábal, J Sepulcre, S Ardanza-Trevijano and P Villoslada. Adaptation in Artificial and Biological Systems - Network Analysis in Natural Sciences and Engineering. **Proceedings of AISB06**. Volume 3. ISBN 1 902956 96 7. Printed by the University of Bristol, Bristol, UK

01. Glioma-Immune Evasion: a System Dynamics Approach. (2005) J Navas, JM Quesada, **J Goñi**, N Vélez de Mendizábal, P Villoslada and FJ Esteban. **Proceedings of II Int Conf on Computational Bioengineering**. H. Rodrigues et al. Eds.

Submitted papers

A network convergence zone in the hippocampus. B Misić, **J Goñi**, O. Sporns, AR McIntosh. Under review in Plos Comp Biol.

Network morphospace. A Avena-Koenigsberger, **J Goñi**, RV Solé, O Sporns. Under review in Journal of the Royal Society – Interface.

Selected scientific communications:

Event: 3rd Indiana CTSI Symposium on Disease and Therapeutic Response Modeling
Place and Date: Indianapolis, IN. Nov 5-6, 2013
Title: Network Measures relating the Human Connectome to Resting-State Functional Connectivity
Authors: **J Goñi**.
Communication Type: Oral.

Event: AAIC 2013: Alzheimer's Association International Conference.
Place and Date: Boston, MA. August. July 13-18, 2013.
Title: Altered connectome mapping in Mild Cognitive Impairment and older adults with cognitive complaints.
Authors: Y Wang, **J Goñi**, O Sporns, SL Risacher, JD West, BC McDonald, L Shen, EF Tallman, B Ghetti, S Gao, MR. Farlow, DP. O'Neill, H Xiao, AJ. Saykin.
Communication type: Poster

Event: 2nd Indiana CTSI Symposium on Disease and Therapeutic Response Modeling
Place and Date: Indianapolis, IN. Nov 13-14, 2012
Title: Complex Systems in Neuroimaging
Authors: **J Goñi**.
Communication Type: Oral.

Event; Society for Neuroscience 2012.
Place and Date: New Orleans, LA. Oct 13-17, 2012.
Title: Predicting resting-state functional connectivity by modeling random-walk processes on structural connectivity.
Authors: **J Goñi**, M van den Heuvel, A Avena-Koenigsberger, R Betzel, O Sporns.
Communication type: Poster

Event: 12th Granada Seminar, Physics, Computation and the Mind.
Place and Date: Granada, Spain. Sept 2012
Title: Information, space and structure in the human brain resting state.
Authors: **J. Goñi**, A. Kolchinsky, M. van den Heuvel, A. Griffa, L. Rocha and O. Sporns.
Communication type: Oral

Event: Society for Neuroscience
Place and Date: Washington, USA, Nov 11-15th, 2011
Title: Grey matter signatures of APOE-e4 and MAPT-H1 in baseline mild cognitive impairment.
Authors: **J. Goñi**, S. Cervantes, G. Arrondo, P. Pastor, M.A. Pastor.
Communication type: Poster

Event: Human Brain Mapping
Place and Date: Barcelona, Spain, June 6-10th, 2010
Title: The neural substrate and functional integration of uncertainty in decision making: an information theory approach
Authors: **J. Goñi**, G. Arrondo, M. Aznárez-Sanado, M. Fernández-Seara, F. Heukamp and M.A. Pastor.
Communication type: Poster

Event: Trends in Complex Systems. Synchronization and Multiscale Complex Dynamics in the Brain.
Place and Date: Dresden, Germany, Nov 2-6th, 2009.
Title: The role of working memory during exploratory/retrieval tasks: A graph theory perspective.
Authors: **J. Goñi**, B. Corominas-Murtra, G. Arrondo, M.A. Pastor and J. Bragard.
Communication type: Poster

Event: ESF workshop on Systems Biology in Medicine.
Place and Date: Barcelona Spain, May 8-10th, 2008.
Title: Topology, semantic modularity and search in lexical networks: evidences from verbal fluency tasks.
Authors: **J. Goñi**, G. Arrondo, J. Sepulcre, I. Martincorena, N. Velez de Mendizabal, B. Bejarano, S. Ardanza-Trevijano, H. Peraita, D. P.Wall, P. Villoslada.

Communication type: Poster

Event: 59th International Neuropsychological Society Mid-year Meeting.

Place and Date: Bilbao, Spain, July 4-7th, 2007.

Title: Mechanisms of lexical access strategies: evidence from lexical networks in neurological diseases.

Authors: J. Sepulcre, **J. Goñi**, N. Véllez de Mendizábal, H. Peraita, D. Wall, P. Villoslada.

Communication type: Oral

Event: Brain Mechanisms of Attention: Biological and Computational Approaches

Place and Date: Soria, Spain, 18-22 July 2005

Title: Sustained attention in patients with altered white matter (Multiple Sclerosis): lesion probability maps and VBM approaches

Authors: J. Sepulcre, **J. Goñi**, N. Véllez de Mendizábal, P. Villoslada

Communication type: Oral

Event: Mathematics in Biology and Medicine

Place and Date: Oeiras, Portugal, September 2004

Title: A dynamic model of the innate immune response.

Authors: **J. Goñi**, R. García-Muñoz, N. Véllez de Mendizábal and P. Villoslada

Communication type: Oral

Referee activity

Conferences: MICCAI 2014, AICOM 2007, BIRD 2007-08, BIDM 2007.

Journals: BMC Systems Biology, Entropy, NeuroImage, PLoS ONE, J Experimental Psychology, Brain imaging and Behavior, PLoS Computational Biology, Frontiers in Computational Neuroscience, Physical Review E.

Internships

Group: Computational Biology Initiative, Harvard Medical School – Center for Biomedical Informatics

Director: Dennis P. Wall

Place: Boston (MA). USA

Date: April-August 2006

Group: Computational Biology Initiative, Harvard Medical School – Center for Biomedical Informatics

Director: Dennis P. Wall

Place: Boston (MA). USA

Date: January-June 2007

Group: Complex Systems Lab, Universitat Pompeu Fabra.

Director: Ricard V. Solé

Place: Barcelona (Spain).

Date: May 2008 and several additional weeks during 2009 and 2010

Teaching

2009-2011. Part-time Lecturer at University of Navarra in Computational and Statistical subjects.

2007-2007. Teaching assistant at Systems Biology Dept – Harvard Medical School in Bioinformatics.

2006-2008. Teaching assistant at University of Navarra in Computational and Statistical subjects.

Overall, more than 300 hours of teaching experience.

Selected Courses-Meetings attended

2014. Organization for Human Brain Mapping. Hamburg (Germany). June 08-12.

2014. Brain Connectivity Workshop. Hamburg (Germany). June 04-06.

2013. Organization for Human Brain Mapping. Seattle (USA). June 16-20.

2013. Brain Connectivity Workshop. University of British Columbia. Vancouver (Canada). June 12-14.

2009. Exploring White Matter with Diffusion-Tensor Imaging. University of Bergen. Bergen (Norway).

2009. Stochastic Models in Physics, Biology, and Social Sciences. Carmona (Spain).

2005. Complex Systems: New Trends and Applications. Universidad de Cantabria. Laredo (Spain).

Grants, awards and other merits

2014 – Promoted from Research Associate to Assistant Research Scientist at the Psychological and Brain Sciences Department in Indiana University.

2012-2013. Awarded with a postdoctoral research grant under the program "Estancias de movilidad postdoctoral" of the Spanish Ministry of Education. Duration: 15 months, from May 2012 until July 2013. Total amount: 42,645 EUR

2012. Declared accredited by the the National Agency for Quality Assessment and Accreditation (ANECA) of the Spanish Ministry of Education for the contractual figures of “Profesor Contratado Doctor” (tenured, full-time), in May 2012.

2011-2014. Participation in the Brain Network Recovery Group (Brain NRG) Phase II - *The Virtual Brain Project*, funded by the James S. McDonnell Foundation (ref. JSMF22002082). Understanding the human brain functions and dysfunctions and create a way to simulate and predict its behaviour. <http://thevirtualbrain.org/team/index.html>.

2007-2010. Participation in the European Project “EU 6thFP - Complex Dis” COMPLEXDIS (ref. NEST-043241) – *Unravelling Complex Diseases with Complexity Theory: from Networks to the Bedside*.

2006-2008. Awarded with a predoctoral research grant under the program "Ayudas predoctorales de formacion" of the Government of Navarra. Duration: 33 months, from Jan 2006 until Sept 2008. Total amount: 36,300 EUR