

dr. Roma Siugzdaite



General Information

MRC Cognition and Brain Sciences Unit
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Summary

Trained as a mathematician and computer scientist, I have extensive experience in statistics, data analysis and modeling in a variety of science disciplines including psychology, neurology, physiology and medicine. I have used a range of analytical methods on functional (fMRI, fNIRS, EEG) and structural (DTI) data analysis. I taught classes on these types of data analysis and statistics. My main research consists in finding appropriate methods to answer brain related research question, and to develop new or to refine old methods if necessary. All of my projects include both applied and fundamental research; moreover projects are based on interdisciplinary collaborations.

Professional Experience

2018-present Research Associate, MRC Cognition and Brain Sciences Unit, University of Cambridge, Cambridge, UK

- Behavioural and neuroimaging data collection of children from low-income families to investigate resilience
- Analyzed MRI and fMRI data from the collected data set using graph theory measures
- Assisted PhD students with fMRI data analysis

2015-2018 Postdoctoral fellow, Experimental psychology department, Faculty of psychology and pedagogical sciences, University of Ghent, Ghent, Belgium

- Conducted research on humans with situs inversus totalis, autism and other clinical conditions (fMRI data)
- Assist MA and PhD students with fMRI data analysis through Neuroimaging clinic (the platform we developed with dr. Ruth Seurinck)
- Took lead on fNIRS (functional near-infrared spectroscopy) data analysis
- Re-analyzed previously conducted study on lateralization of brain functions and tested a hypothesis on overlapping functional networks using structural equation modeling
- Organize internal and external seminars to discuss running projects and hot topics in the field of Cognitive Neuroscience

2014-2015 Postdoctoral fellow, Department of Data Analysis, Faculty of psychology and pedagogical sciences, University of Ghent, Ghent, Belgium

- Analyzed fMRI data from shared databases (ABIDE) using graph theory measures
- Assisted MA and PhD students with fMRI data analysis

2012-2014 Postdoctoral fellow, MEDISIP, Department of Engineering and Information Systems, University of Ghent Hospital, Ghent, Belgium

- Conducted longitudinal study on the effect of the lesion on resting state data in small animals (Multidisciplinary research project)
 - Performed MRI scanning of small animals,
 - Analyzed fMRI data,
 - Wrote the paper on data reproducibility

2011-2012 Postdoctoral fellow, Neurophysiology laboratory, Department of Health Sciences, University of Milan, Medical School, Milan, Italy

- Conducted an experiment using Transcranial magnetic stimulation (TMS) technique, analyzed data and wrote a paper

2010-2011 Lecturer, Faculty of Social Informatics, Mykolas Romeris University, Vilnius, Lithuania

- Taught practical sessions on statistical data analysis for master students in social sciences

2009-2010 Postdoctoral fellow, Human Neuroscience laboratory, University of Chicago, USA

- Participated in the longitudinal study "Evaluation of the mirror neuron theory based therapy in Aphasia"
- Conducted fMRI data analysis
- Worked on Structural equation modeling
- Developed a method to facilitate the analysis of lesion-affected MRI data

2008 Postdoctoral fellow, Cognitive Neuroscience department, SISSA, Trieste, Italy

- Participated in the project "Facial emotion perception in children with ASD"
- Tested children's behavior using motor tasks and IQ tests.
- Full responsibility for analyzing data

2006-2007 Research fellow, Cognitive Neuroscience department, SISSA, Trieste, Italy

- Assisted PhD students with statistics
- Designed behavioral experiments
- Conducted pilot study on cross-cultural differences in face perception

2005-2006 Teaching assistant, Vilnius Gediminas Technical University, Lithuania

- Taught practical sessions on C and C++ for bachelor students in mechanical engineering

1996-2007 IT specialist, Joint Stock Company East distribution network, Subsidiary Vilnius Electric Network, Lithuania

- Developed Geographical Information System (GIS) for Vilnius city
- Designed electricity dispatch schemes
- Taught company personnel to use new technologies

Education and Training

2006 PhD in Computer science, Kaunas Vytautas Magnus University, Lithuania

1996 M.S. in Mathematics, Vilnius Pedagogical University, Lithuania

Publications

- Vassena, E., Gerrits, R., Demanet, J., Verguts, T., **Siugzdaite, R.** "Anticipation of a mentally effortful task recruits Dorsolateral Prefrontal Cortex: an fNIRS validation study" *accepted to Neuropsychologia*
- Vingerhoets, G., Li, X., Hou, L., Gerrits, R., Verhelst, H., **Siugzdaite, R.**, Roberts, N. "Brain structural and functional asymmetry in human situs inversus totalis" *Brain structure and function* IF 5.6, 2018
- Grecucci, A., **Siugzdaite, R.**, Job, R. "Editorial: Advanced Neuroimaging Methods for Studying Autism Spectrum Disorder" *Frontiers in Neurosciences*, September 2017
- De Tommaso, M., Trotta, G., Vecchio, E., **Siugzdaite, R.**, Ricci, K., Stramaglia, S. "Brain networking analysis in migraine with and without aura" *The Journal of Headache and Pain*, IF 3.6, December 2017
- Pappaiani, E., **Siugzdaite, R.**, Grecucci, A. "Three shades of grey: detecting brain abnormalities in children with autism by using Source-, Voxel- and Surface-based Morphometry" *European Journal of Neuroscience*, September 16, 2017
- Mueller, S.C., Cromheeke, S., **Siugzdaite, R.**, Boehler, C.N. "Neural correlates of working memory for (ir)relevant emotional faces: a development comparison between adolescents and adults", *Developmental Cognitive Neuroscience*, Volume 26, August 2017, Pages 91-100, IF 4.3
- Benavides-Varela, S., **Siugzdaite, R.**, Gomez, D.M., Macagno, F., Cattarossi, L., Mehler, J. "Functional interactions among brain regions supporting neonatal word learning in distributed episodes" *PNAS*, 2017, vol. 114 no. 29, 7588-7593, IF 9.4
- Matthysen, W., Marinazzo, D., **Siugzdaite, R.** "Hypo- and hyper-connectivity in Default Mode Network related to Social Impairment in Children with Autism Spectrum Disorder" *PeerJ*, 2016
- Grecucci, A., Rubicondo, D., **Siugzdaite, R.**, Surian, L., Job, R. "Uncovering the social deficits in the autistic brain: A morphometry study", *Frontiers in Neuroscience. Advanced neuroimaging methods for studying autism disorder*, 2016, IF 3.4
- Pappaiani, E., **Siugzdaite, R.**, Grecucci, A. "An abnormal cerebellar network in children with autism spectrum disorder: a morphometry study" *Autism Open Access*, 2016, IF 1.84
- Leonetti, A., Puglisi, G., **Siugzdaite, R.**, Cerri, G., Borroni, P. "What you see is what you get: motor resonance in peripheral vision" *Experimental brain research*, 2015, IF 2.057
- Pijnenburg, M., Brumagne, S., Caeyenberghs, K., Janssens, D., Marinazzo, D., Swinnen, S.P., Claeys, N., Goossens, R. **Siugzdaite, R.** (2015). "Resting-state functional connectivity of the sensorimotor network in individuals with non-specific low back pain and the association with the sit-to-stand-to-sit task" *Brain connectivity*
- Grecucci, A., Pappaiani, E., **Siugzdaite, R.**, Theuninck, A., Job, R. (2014). Mindful emotion regulation: Exploring the neurocognitive mechanisms behind mindfulness" *BioMed Research*, Article ID 670724
- Caeyenberghs, K., **Siugzdaite, R.**, Marinazzo, D., Driekoningen, D., Swinnen, S.P. (2014). "Abnormal functional connectivity in children with diffuse axonal injury" *Brain connectivity*, 13 (4), 703-713
- Carmo, J., Rumiati, R.I., **Siugzdaite, R.**, Brambilla, P. (2013). "Preserved imitation of known gestures in children with high-functioning autism" *ISRN Neurology*, Volume 2013 (2013), Article ID 751516, 8 pages
- Grecucci, A., Brambilla, P., **Siugzdaite, R.**, Londero, D., Fabbro, F., Rumiati, R.I. (2013). "Emotional resonance deficits in autistic children" *J Autism Dev Disord.*, 43 (3), 616-628, IF 3.5

- Solodkin, A., Hasson, U., **Siugzdaite, R.**, Schiel, M., Chen, E. (2010). "Virtual Brain Transplantation (VBT): A method for accurate image registration and parcellation in large cortical stroke" *Arc Ital Biol*, 148 (3), 219-241, IF 1.3
- Grecucci, A., Crescentini, C., **Siugzdaite, R.**, (2008). "Vicarious Function in the Motor Cortex" *A Computational Investigation. Neuroscience letters*, 434(2):185-90, IF 2.0
- Siugzdaite, R.** (2006). "Mathematical Modelling of Complex Systems and Strategies Formation" *Doctoral thesis*
- Siugzdaite, R.** (2005). "Stability Analysis of Cellular Automata Generated Clusters" *Mathematical modeling and analysis* 10 (1), 83-90, IF 0.5
- Siugzdaite, R.**, Norvaisas, S. (2003). "Modelling the country's urbanization process by cellular automata" *Town planning and architecture*. 27(4)
- Siugzdaite, R.**, Norvaisas, S. (2002). "Cellular Automata and Energetics System Formation" *Mathematical modeling and analysis*, 7(2), 319-326
- Siugzdaite, R.**, Norvaisas, S. (2002). "Energetics as Self-organized System: Methodological Aspects" *Nonlinear analysis*, 7(2), 123-137, IF 1.12

Publications submitted

- Boccardoro, S., **Siugzdaite, R.**, Hudson, A.R., Maeyens, L., Van Hamme, Ch., & Mueller, S. C. "Early maltreatment experience increases mentalizing network functional connectivity during resting-state", *Nature communication*, IF 12, under revision
- Siugzdaite, R.**, Descamps, B., Van Den Berge, N., Wu, G., Van Mierlo, P., Raedt, R., Fias, W., Marinazzo, D. "Reproducible Resting State Functional Connectivity in Anesthetized (with MED) Rat Brain", *Brain connectivity*, under revision
- Matthysen, W., Grecucci A., Marinazzo, D., Remo J., **Siugzdaite, R.** "Co-presence of hypo- and hyper-connectivity in different regions of the default mode network in mid age high-functioning autistics. Preliminary results" *Developmental cognitive neuroscience*, IF 4.8, under revision
- Serrano, B.A., Forlim, G.C., **Siugzdaite, R.**, Marinazzo, D. "Development of diagnosis tools for a new perspective on ADHD children" *Health Games*, IF 1.3 , under revision
- Forlim, G.C., **Siugzdaite, R.**, Yu, Y., Tang, Y.L., Liao, W., Marinazzo, D. "Thalamic hemodynamics and connectivity modulations in Rolandic epilepsy" *Epilepsia*, IF 4.7, under revision

In preparation

- Siugzdaite, R.**, Bal, T., Marinazzo, D., Vingerhoets, G. "Neural circuits underlying imitation of novel speech and hand gestures, a connectivity analysis" *Human Brain Mapping*, IF 4.96, in preparation
- Siugzdaite, R.**, Aerts, H., Marinazzo D. "Alterations in structural and functional connectome in children with autism spectrum disorder" *in preparation to PLOS one*, IF 4.4
- Bardi, L., Zanatta, A., **Siugzdaite, R.**, Genschow, O., Brass, M. "A fNIRS study on the role of rTPJ in self-other distinction during face-to-face interaction", *in preparation*
- Vettori S., Grecucci A., Marinazzo D, **Siugzdaite, R.** "An Effective Connectivity Approach to Autism Spectrum Disorders" *in preparation to Autism research*, IF 4.5
- Labanauskas, V., Gerrits, R., Vingerhoets, G., **Siugzdaite, R.** "Laterality differences in spatial processing between right- and left- handers", *in preparation to Laterality journal*, IF 1.4
- Siugzdaite, R.**, Aerts, H., Pappaiani, E., Grecucci, A., Marinazzo D. "During the puberty morphological differences in children with autism are due to increased gyrification", *in preparation to Journal of autism and developmental disorders*, IF 3.5
- Siugzdaite, R.**, Vingerhoets, G. Assortativity can detect functional lateralization in resting brain
- Siugzdaite, R.**, Puglisi, G., Leonetti, A., Cabinio, M., Cerri, G., Borroni, P. "Action Observation: Does Grasping Of Emotional Objects Modulate Motor Resonance? TMS study" *on hold*

Siugzdaite, R., Bardi, L., Gerrits, R., Brass, M. "Reproducibility of the functional localizers in time: A fNIRS validation study", *in preparation*

Siugzdaite, R., Descamps, B., Van Den Berge, N., Wu, G., Van Mierlo, P., Raedt, R., Fias, W., Marinazzo, D. "How Lesions Change Resting State Functional Connectivity in Rat Brain", *in preparation*

Siugzdaite, R., Roine, T., Descamps, B., Amico, E., Fias, W., Marinazzo, D. "Long-term changes of diffusion tensor imaging in the lesioned rat brain" *in preparation*

Sprengers, M., Raedt, R., **Siugzdaite, R.**, Van Nieuwenhuyse, B., Descamps, B., Dauwe, I., Delbeke, J., Wadman, W., Boon, P., Vonk, K. "Consequences Of Kainic Acid-Induced Piriform Cortex Lesions And Therapeutic Potential Of Piriform Cortex Deep Brain Stimulation In The Intrahippocampal Kainic Acid Model" *in preparation*

Key Skills

Teamwork, Team management, Working in international environment, Communication, Adaptability, Conflict Resolution, Self-motivation, Loyalty and Discretion, Responsibility, Flexibility, Quick learner, Detail-oriented, Time management, Organizational Skills

Transferable Skills

OS	MacOS, Windows, Linux
Office	MS Office, Latex
Programming	Pascal, Matlab, Python (basics), Bash, C, C++
Statistics	SPSS, R
Neuroimaging	SPM, AFNI, FSL, Freesurfer, Homer, ExploreDTI, MRtrix, EEGLab, Fieldtrip, NIRS toolbox, GREYNA, BCT ect

Languages

Lithuanian (native speaker), English (near-native fluency), Italian (near-native fluency), Russian (proficiency), Dutch (basics, A2)

Grants, prices and invited talks

- 2018 Collaboration project: Portable brain technologies in educational neuroscience research EARLI Emerging Field Group 2018 - 2020, Prof. van Atteveldt, Amsterdam University
- 2017 Mobility grant for teaching neuroimaging data analysis in Matlab. Seville, Spain
- 2007 Junior Research Fellowship Program of the Gebert Ruf Foundation's "Swiss Baltic Net", fMRI data analysis, Swiss National Center for Affective Sciences, Geneva University (Geneva, Switzerland) with prof. Patrik Vuilleumier
- 2005 Junior Research Fellowship Program of the Gebert Ruf Foundation's "Swiss Baltic Net", Decision Support Systems, Fribourg University (Fribourg, Switzerland), prof. Heinz Groefflin
- 2003 Short stay grant at the University of Birmingham (Birmingham, UK), Research Fellow (COSI project), Computational modeling project (Dr. Jonathan Rowe)
- 2002 2nd Prize for strategical planning models. Lithuania. (prof S. Norvaisas)
- 2015 Invited talk at the Conference on Autism "Morphological differences in autistic adolescents are due to increased gyrification", Gent, Belgium
- 2013 Invited talk at the 1st Baltic-Nordic summer school on Neuroinformatics on "Functional connectivity of resting state fMRI and application in epilepsy, ADHD and depression", Kaunas, Lithuania

Teaching experience

- 2016-2017 Neuroimaging methods, Ghent University, Ghent, Belgium

- fMRI preprocessing: resting state and task fMRI;
- functional connectivity;
- Introduction to fNIRS.

2010-2011 Statistics in social sciences, Mykolas Riomeris University, Vilnius, Lithuania

2005-2006 C and C++ programming, Vilnius Gediminas Technical University, Vilnius, Lithuania

Editorial

2016/2017 Special issue in Frontiers in Neuroscience: Advanced neuroimaging methods for studying autism disorder, IF 3.4, <https://www.frontiersin.org/research-topics/4039/advanced-neuroimaging-methods-for-studying-autism-disorder>

Academic service

Peer reviews

- PlosOne
- Computers in Biology and Medicine
- Frontiers in Systems Neuroscience
- Frontiers in Aging Neuroscience
- Brain connectivity
- Frontiers in Neurology
- Neurocomputing
- F1000Research

Support services

- Neuroimaging clinic consultation, organizing seminars on hot topics and supporting the webpage for clinic
- Thesis supervision of master students and Erasmus students
- Participating in PhD defenses as external reviewer
- Evaluation of BA student papers
- Exams supervision

Organizing

- Invited talks for the Center for Cognitive Neuroscience, www.ccn.ugent.be
- Lunch seminars for the Experimental Psychology Department

Hobbies

Basketball

1982-1990 Kaisiadorys Secondary school team, Lithuania

1990-1992 Vilnius Pedagogical University second team, Lithuania

2013 European Companies Sport Games (Ugent mixed team, coach David Lombart)

2017 1st place European Companies Sport Games (Ugent -Stad Ghent women team, coach Kathy Strumane)

Memberships

Lithuanian Neuroscience Association

Organisation for Human Brain Mapping

FENS

Society of Neuroscience

Presentations at conferences and seminars

- 2018 "Assortativity can predict functional lateralization of the resting brain", poster at Laterality conference, Dundee, Scotland
- 2018 "Building better biomarkers in Autism spectrum disorder", seminar at University of Trento, Italy
- 2018 "Congruency investigation of language lateralization between task and resting state fMRI in humans with situs inversus totalis", Fourth BCAM Workshop on Quantitative Biomedicine for Health and Disease, Bilbao, Spain
- 2018 "Directional connectivity and the whole brain connectivity with graph measures", seminar at University of Padova, Italy
- 2017 "Preparation for mental effort recruits DLPFC: an fNIRS investigation", 4th annual meeting of the French network on fNIRS, Lille, France
- 2017 "Neural circuits underlying the production of speech and hand gestures, a connectivity analysis", OHBM, Vancouver, Canada
 - "DLPFC involvement and lateralization during preparation for mental effort: a fNIRS study", ICON. Amsterdam, Netherlands
 - "Behind the grey: abnormal grey matter markers in children with autism by using Voxel-, Source-, Surface-Based Morphometry", Neuropsychology meeting. Bressanone, Italy
- 2016 "Congruency investigation of language lateralization between task and resting state fMRI in humans with situs inversus totalis", Fifth biennial conference on Resting state and brain connectivity. Vienna, Austria
 - "Lesion to hippocampus changes resting state functional connectivity in rat brain reflecting structural damage", Brain Modes. Brussels, Belgium
 - "Neural circuits underlying the production of speech and hand gestures, a connectivity analysis", Nijmegen Lectures. Unconventional wisdom: 3 neurobiological provocations about brain and language. Nijmegen, Netherlands
- 2015 Morphological differences in autistic adolescents are due to increased gyrification. Conference on Autism, (invited talk), Gent, Belgium
 - Structural and functional connectivity analysis in children with autism spectrum disorder (oral presentation). Granada, Spain
 - Belgian neuroscience conference, Leuvel, Belgium
- 2014 "Lesion to hippocampus changes resting state functional connectivity in rat brain reflecting structural damage". Fourth biennial conference on Resting state and brain connectivity. Boston, USA
 - Belgian neuroscience conference, Gent, Belgium
 - OHBM, Hamburg, Germany
- 2013 Belgian neuroscience conference, Liege, Belgium
 - "Functional connectivity of resting state fMRI and application in epilepsy, ADHD and depression", 1st Baltic-Nordic summer school on Neuroinformatics (invited talk), Kaunas, Lithuania
- 2012 Hertie sponsored Winter School, Brain Dynamics and Dynamics of Brain Disease, Obergurgl, Austria
 - Dynamic causal modeling (DCM) course, Paris, France
 - Neuroinformatics conference. Frankfurt, Germany
 - "What you see is what you get: motor resonance in peripheral vision", FENS, 2012. Barcelona, Spain
- 2011 "What you see is what you get: motor resonance in peripheral vision", Workshop Concepts, Objects, Action. 2011. Rovereto, Italy
- 2010 Society for Neuroscience conference, 2010. Chicago, USA
 - Neurobiology of language conference, 2010. Chicago, USA

- 2009 "Emotional resonance deficits in autistic children", Autism conference. London, UK
Neuropsychology meeting. Bressanone, Italy
- 2006 IC Citizens and Governance for Sustainable Development, CIGSUD, 2006 Vilnius, Lithuania
- 2005 10th International Conference Mathematical modeling and analysis, Trakai, Lithuania
Seminar "Mathematical modelling of Complex Systems and Strategies Formation", IMI, Vilnius, Lithuania
IC Applications of Social Network Analysis, Zurich, Switzerland
Seminar "Mathematical modelling of Complex Systems and Strategies Formation", Fribourg
Seminar "Mathematical modelling of Complex Systems and Strategies Formation", Zinal, Switzerland
Seminar "Stability analysis of CA generated clusters" VGTU, Vilnius, Lithuania
- 2004 IC Complexity in the Living: a problem-oriented approach?, Rome, Italy
Seminar "Mathematical modelling of complex system and strategies formation", Kaunas, Lithuania
Seminar "Modelling of Complex Systems and Scenarios Formation" IMI, Vilnius, Lithuania
- 2003 Seminar in CASA UCL "Urban model with Cellular Automata", London, UK
Seminar "Self-organized Criticality in Energetics" Kaunas, Lithuania
IC Mathematical modeling and analysis, Trakai, Lithuania
- 2002 IC NEEDS, Cadiz, Spain
Energetics and Electrotechnics Technologies, Kaunas, Lithuania
- 2001 3rd WSEAS Symposium on Mathematical methods and computational techniques in electrical engineering (MMACTEE 2001), Athens, Greece
IC NEEDS, Cambridge, UK
Energetics and Electrotechnics Technologies, Kaunas, Lithuania
IC "Mathematical Modelling and Analysis" Vilnius, Lithuania
IC "International Conference on Mathematical Modelling" Roorkee, India
IC "Second CeNDEF Workshop on Economic Dynamics" Amsterdam, Holland
- 2000 "Conference of Lithuanian Mathematical Society" Vilnius, Lithuania
IC "Sustainable Development" Vilnius, Lithuania
Energetics and Electrotechnics Technologies" Kaunas, Lithuania
Mathematics and Teaching Mathematics" Kaunas, Lithuania