Karolina Finc

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Research Assistant, PhD candidate

Neurocognitive Laboratory
Centre for Modern Interdisciplinary Technologies
Nicolaus Copernicus University in Toruń, Poland
Wileńska 4, 87-100 Toruń

Phone: (+48) 668 336 431
E-mail: karolinafinc@gmail.com
GitHub: https://github.com/kfinc
Twitter: @karofinc

Research interests

Connectomics	Plasticity of the human brain networks, reorganization of functional brain network during cognition
Neuroplasticity	Experience dependent plasticity, compensatory brain plasticity, cognitive training design
Cognition	Learning and memory, working memory, decision making
Data science	Network analysis, Machine learning, data visualization

Academic career

2018	**Visiting Scholar**, University of Pennsylvania, Department of Bioengineering, Complex Systems Group (supervisor: Prof. Danielle Bassett), Philadelphia, USA.
2014 - present	**Research Assistant** (PhD candidate), Neurocognitive Laboratory, Centre for Modern Interdisciplinary Technologies, Nicolaus Copernicus University in Toruń, Poland.
2014	**Visiting Scholar**, Max Planck Institute for Human Development, Center for Lifespan Psychology (supervisor: Prof. Simone Kühn), Berlin, Germany.
2014	**Intern**, Neurocognitive Laboratory, Centre for Modern Interdisciplinary Technologies, Nicolaus Copernicus University in Toruń, Poland.

Education

2017 - 2018	**Applied Mathematics**, Nicolaus Copernicus University, Faculty of Mathematics and Computer Science.
2012 - 2014	**Cognitive Science**, Master of Art Degree (03/07/2014), Nicolaus Copernicus University, Faculty of Humanities, Institute of Philosophy. Thesis: *Effect of action video game training on temporal information processing in the range of tens of milliseconds.*
2009 - 2012	**Cognitive Science**, Bachelor of Art Degree (04/07/2012), Nicolaus Copernicus University, Faculty of Humanities, Institute of Philosophy. Thesis: *The role of sleep in neuroplasticity in learning and memory context.*

Scholarships & Awards

2018	START travel grant for 1-month study visit (16 000 PLN)
2018	START scholarship for outstanding young scholars at the beginning of their scientific careers additionally increased by prof. Barbara Skarga scholarship for research that displays courageous breaking of interdisciplinary boundaries, opening new research perspectives and creating new values in science, Foundation for Polish Science (36 000 PLN)
2017	ETIUDA Scholarship for PhD candidates (88 838 PLN), National Science Centre (2017/24/T/HS6/00105), Poland
2017	I prize (Best Oral Presentation Award) “Dynamics and plasticity of functional networks in the human brain”, Neuromania, Toruń, Poland
2014	Erasmus+ Scholarship for the internship at Max Planck Institute for Human Development, Center for Lifespan Psychology, Berlin, Germany
2014	Award for the best Master Thesis on the Faculty of Humanities, Nicolaus Copernicus University
2014	Award for the Best Graduate from the Faculty of Humanities, Nicolaus Copernicus University
2014	Laureate of the regional “Student Noble” contest
2014	Entry in the Golden Book of the Best Students at the Faculty of Humanities, Nicolaus Copernicus

	University
2013/2014	Scholarship of Minister of Science and Higher Education for outstanding academic performance
2013	I prize (Best Poster Award) “Brain in the mourning: neurobiological correlates of resilience”, VIII International Scientific-Educational Conference „Life-Giving Death – in Memory of Elizabeth Kubler-Ross”, Medical University of Białystok, Białystok
2013/2014	Rector Scholarship for the best students at the Nicolaus Copernicus University
2012/2013	
2011/2012	
2010/2011	Scholarship for high academic performance at the Nicolaus Copernicus University

Projects & Grants

2018 - 2022	**Principal investigator** computational grant “Dynamics and plasticity of human connectome related to higher cognitive functions”, funded by Wroclaw Centre for Networking and Supercomputing.
2018 - 2022	**Investigator** in SONATA BIS grant “The comprehensive study on the brain basis of low numeracy skills and the behavioral and neuroplastic changes evoked by training of spatial-numerical association”, funded by National Science Centre (2017/26/E/HS6/00033). Principal Investigator: Dr. Małgorzata Gut.
2016 - 2018	**Principal investigator** in PRELUDIUM 9 grant “Temporal dynamics of functional connectivity changes induced by cognitive training. The role of individual differences”, funded by National Science Centre (2015/17/N/HS6/03549). Supervisor: Prof. Simone Kühn.
2014 - 2016	**Investigator** in HARMONIA 4 “Dynamic neural correlates of consciousness as a function of the level of processing”, funded by National Science Centre (2013/08/M/HS6/00004). Principal Investigator: Dr. Marek Binder.
2014 - 2016	**Investigator** in PRELUDIUM 5 grant “The brain correlates of the normal cognitive ageing assessment with the use of the functional magnetic resonance imaging”, funded by National Science Centre (2013/091N/HS6/O2634). Principal Investigator: Patrycja Naumczyk.
2014 - 2015	**Investigator** in SYMFONIA 1 grant “NeuroPerKog: development of phonemic hearing and working memory in infants and children”, funded by National Science Centre (20I3/08/W/HS6/00333). Principal Investigator: Prof. Włodzisław Duch.
2016 - present	**Collaborator** in The BRAin LAB, Department of Human Development and Family Studies, Colorado State University, Fort Collins, CO, USA, Head: Dr. Agnieszka Burzyńska.
2014 - present	**Collaborator** in "Mechanisms and Sequential Progression of Plasticity", Max Planck Institute for Human Development, Center for Lifespan Psychology, head: Prof. Simone Kühn.
2014 - 2015	**Investigator** in "Mathematical games as a way of overcoming cognitive deficits in dyscalculia", University of Young Inventors, Ministry of Science and Higher Education grant, Principal Investigator: Dr. Jacek Matulewski.

Publications

[4] Naumczyk, P., Sawicka, A.K., Brzeska, B., Sabisz, A., Jodzio, K., Radkowski, M., Czachowska, K., Winklewski, P. J., **Finc, K.**, Szurowska, E., Demkow, U., Szarmach, A. (2018). Cognitive Predictors of Cortical Thickness in Healthy Aging. In: . *Advances in Experimental Medicine and Biology*. Springer, New York, NY.

[3] Burzynska, A. Z. , **Finc, K.** , Taylor, B. K., Knecht, A., Kramer A. F. (2017). The dancing brain: Structural and functional signatures of professional dance training. *Frontiers in Human Neuroscience 11, 566.*

[3] Binder, M., Gociewicz, K., Windey, B., Koculak, M., **Finc, K.**, Nikadon, J., Derda, M., Cleeremans, A. (2017). The levels of perceptual processing and the neural correlates of increasing subjective visibility. *Consciousness and Cognition 55,* 106-125.

[1] **Finc, K.**, Bonna, K., Lewandowska, M., Wolak, T., Nikadon, J., Dreszer, J., Duch, W., Kühn, S. Transition of the functional brain network related to increasing cognitive demands. (2017). *Human Brain Mapping* 38 (7), 3659–3674.

Conference presentations

[1] **Finc, K.**, M., Bonna, Kosik, K., Duch, W., Kühn, S. (2018). Dynamics and plasticity of functional brain networks. University of Washington eScience Institute, Seattle, USA, poster.

[2] **Finc, K.**, M., Bonna, Kosik, K., Duch, W., Kühn, S. (2018). Ongoing dynamics of functional brain network changes during 6-week working memory training, Singapore., poster.

[3] **Finc, K.**, Kosik, M., Bonna, K., Duch, W., Kühn, S. (2018). Task-based Functional Network Changes Following 6-week Working Memory Training, NEURONUS 2018 IBRO&IRUN Neuroscience Forum, Kraków, poster.

[4] Kosik, M., **Finc, K.**, Bonna, K., Duch, W., Kühn, S. (2018). Exploring working memory modalities - functional network alterations due to increasing demands of visuospatial and auditory working memory tasks, NEURONUS 2018 IBRO&IRUN Neuroscience Forum, Kraków, poster.

[5] Bonna, K., **Finc, K.** , Bola, Ł., Zimmermann, M., Mostowski, P., Jednoróg, K., Marchewka, A., Rutkowski, P., Szwed, M. (2018). Various aspects of compensatory plasticity during resting-state in early deaf adults. NEURONUS 2018 IBRO&IRUN Neuroscience Forum, Kraków, poster.

[6] **Finc, K.**, Bonna, K., Dobija, M. , Pięta, B. , Kosik, M., Lubiński, A., Muchlado M., Przybysz, A., Narębski, S., Migała, B., Duch, W., Kühn, S. (2017). Temporal dynamics of functional network changes following 6-week working memory training: preliminary results, Aspects of Neuroscience, Warszawa, poster.

[7] **Finc, K.**, Bonna, K., Lewandowska, M., Wolak, T., Nikadon, J., Dreszer, J., Duch, W., Kühn, S. (2017) Default Mode Network Role in Global Workspace Formation During Increasing Cognitive Demands. Keystone Symposia: Connectomics, Santa Fe (USA), invited talk & poster.

[8] Bonna, K., **Finc, K.**, Duch, W. (2017) Discovering generative model of human connectome by symbolic regression. Keystone Symposia: Connectomics, Santa Fe (USA) poster.

[9] **Finc, K**., Bonna, K., Dobija, M., Lubiński, A., Nikadon, J., Wolak, T., Lewandowska, M., Dreszer, J. (2016). The shift of the functional network efficiency during a working memory task. Parcellation scheme matters. Annual Meeting of the Organization for Human Brain Mapping, Geneva poster.

[14] Bonna, K., **Finc**, K., Dobija, M., Lubiński, A., Nikadon, J., Wolak, T., Lewandowska, M., Dreszer, J. (2016). The relationship between whole-brain modularity of the functional network and behavioral performance during a working memory task. Annual Meeting of the Organization for Human Brain Mapping, Geneva, poster.

[15] **Finc K.**, Bonna, K. (2016) Functional network reconfiguration related to increasing cognitive effort. NEURONUS 2016 IBRO&IRUN Neuroscience Forum, Kraków, talk.

[16] **Finc K.**, Bonna, K., Dobija, M., Lubiński, A., Nikadon, J., Lewandowska, M. (2015) Frontoparietal and default mode network functional connectivity changes during increased load of working memory task associated with behavioral performance, Aspects of Neuroscience, Warszawa, poster.

[17] Bonna, K., **Finc, K.**, Dobija, M., Lubiński, A., Nikadon, J., Lewandowska, M. (2015) Global modularity changes during increased load of working memory task associated with behavioral performance, Aspects of Neuroscience, Warszawa, poster.

[18] **Finc, K.**, Nikadon, J., Szczypiński J., Szmytke, M, Bonna, K., Sadlok, M., Pawlaczyk, N., Wojciechowski, J. , Wach, P., Patyk, J., Bałaj, B. , Dreszer-Drogorób, J., Wolak, T., Lewandowska, M. (2015). Resting state functional connectivity predicts BOLD activity during working memory task, NEURONUS 2015 IBRO&IRUN Neuroscience Forum, Kraków, poster.

[19] **Finc, K.**, Szymaszek, A., Dreszer-Drogorób, J. (2014) Does improvement in temporal information processing underlie cognitive benefits after action video game training? The FENS Forum of Neuroscience, Mediolan, poster.

[20] **Finc, K.** (2013). The stability-plasticity dilemma in sleep and memory context, Philosophy of Neuroscience, Rostock, Germany, talk.

[21] **Finc, K.**, Goraczewski, Ł., Groblica, P., Wójcik, A. (2013). Effect of Action Video Games on Timing and Time Perception, TIMELY Conference, Granada, poster.

[22] **Finc, K.**, Goraczewski, Ł., Wójcik, A. (2013). Games for brains: a new way of maximizing motivation in education, California Cognitive Science Conference, Berkeley, poster.

[23] **Finc, K**. (2013). Brain in the mourning: neurobiological correlates of resilience, VIII International Scientific-Educational Conference „Life-Giving Death – in Memory of Elizabeth Kubler-Ross", Bialystok, Poland, poster.

Teaching experience

2015/2016 **Neuropsychology**, workshops (30h), Cognitive Science (1st year), Nicolaus Copernicus University
2014/2015 **EEG workshops**, workshops (30h), Cognitive Science (2nd year) Nicolaus Copernicus University

Additional training

2018	Neurohackademy Summer School (University of Washington eScience Institute)
2018	Data Scientist with Python (DataCamp, 84h Career Track, 22 courses)
2018	Data Scientist with R (DataCamp, 95h Career Track, 23 courses)
2018	Introduction to Shell for Data Science (DataCamp)
2016	Hands-on Workshop in Brain Networks (Society of Applied Neuroscience)
2016	Exploring the Human Connectome (Dutch Connectome Lab, Utrecht Summer School)
2015	Second Brain Connectivity Course (Neurometrika, Grenoble Institute of Neuroscience)
2015	Research team management (Foundation for Polish Science, SKILLS project, Poznań)
2015	Scientific communication for different audiences (Foundation for Polish Science, SKILLS project, Poznań)
2015	Commercialization of research results (Foundation for Polish Science, SKILLS project, Poznań)
2015	Research management (Foundation for Polish Science, SKILLS project, Warsaw)
2015	Simultaneous EEG and fMRI workshops (Bioimaging Research Center, Toruń)
2014	MRI safety training (Max Planck Institute for Human Development)
2014	Data Management for Clinical Research (Vanderbilt University, Coursera)
2014	R Programming (Johns Hopkins University, Coursera)
2014	FMRI data analysis in SPM (SWPS, Warsaw)
2014	Neuroimaging of structure and function of human brain (SWPS Training, Warsaw),
2014	Statistical Analysis of fMRI Data (Johns Hopkins University, Coursera)
2013	Simultaneous EEG and fMRI workshops (Brain Products GmbH, ICNT, Toruń)
2013	Simultaneous EEG and TMS workshops (Brain Products GmbH & MAG & More GmbH, Toruń)
2013	FMRI safety & data acquisition training (General Electric, ICNT, Toruń)
2013	Statistics in Medicine (Stanford University, Stanford Online)
2013	Neuropsychological problems after stroke (AFA-LOG, Bydgoszcz)
2013	Data Analysis (Johns Hopkins University, Coursera)
2012	Adobe InDesign (AdAstra Society, Toruń)

Other scientific activities

2016 - present	Supervisor of the Neuroimaging Scientific Circle at Nicolaus Copernicus University in Toruń
2016	Conducting fMRI workshops for University of Children, Nicolaus Copernicus University in Toruń
2015	Conducting workshops “Memory Labyrinth” at Nencki Institute of Experimental Biology, Polish Academy of Science, Warsaw
2014, 2013	Co-organizer of NeuroMania Conference at Nicolaus Copernicus University in Toruń
2010/2011	President of Students’ Cognitive Science Circle at Nicolaus Copernicus University in Toruń
2010/2011	Vice-president of Students’ Cognitive Science Circle at Nicolaus Copernicus University in Toruń

Membership

2016, 2018	Organization for Human Brain Mapping
2018	Neuroimaging Scientific Circle at Nicolaus Copernicus University in Toruń

Skills

- Programming: Python, R, MATLAB, SQL, bash
- PRESENTATION
- Linux
- LaTeX
- fMRI, EEG and simultaneous fMRI-EEG data acquisition