



PhD Program between the Freie Universität Berlin (FUB) and the China Scholarship Council (CSC)

**Open PhD Position at Freie Universität Berlin,
offered only to Chinese CSC scholarship candidates 2025**

Department/Institute: Department of Education and Psychology |

Subject area: Cognitive psychology, cognitive neuroscience |

Name of Supervisor: Prof. Dr. Radoslaw Martin Cichy (Mr.) |

Number of open PhD positions: 2 |

Type of the PhD Study: Full-time |

Project title: Unravelling recurrent computations in visual perception |

PhD Project description:

Humans recognize everyday visual objects without effort and in the blink of an eye. This ability is mediated by information flow in two directions: feed-forward information flow from the retina through the processing cascade of the brain, and recurrent information flow, originating from within the brain and transferring information laterally and through feedback. While the existence of these two kinds of information flow is undoubted, their respective role in mediating vision is unclear. The goal of this PhD project is to determine the respective roles of feed-forward and recurrent information flow in human vision. For this the project will use brain stimulation techniques in humans (Transcranial Magnetic Stimulation) to disrupt neural activity, and neuroimaging techniques (fMRI, EEG) to track feed-forward and recurrent neural activity in space and time.

Language requirements:

- IELTS: 6,5 oder TOEFL: 95 ibt

Or

- Test Daf 16 bzw. DSH 2

Academic requirements:

Suitable subject areas: psychology, neuroscience, cognitive science

The ideal candidate has quantitative skills as well as programming skills next to a solid understanding of human brain function. Experience with TMS is desirable, but not necessary.

A Bachelor degree may be sufficient based on the demonstrated skills of the applicant – you need to have reached the highest possible grade and go through additional evaluation. A Master degree is therefore strongly preferred.

Information of the professor or research group leader (website, awards etc.):

Website of the research group:

https://www.ewi-psy.fu-berlin.de/en/einrichtungen/arbeitsbereiche/neural_dyn_of_vis_cog/index.html

Personal website with CV

<http://userpage.fu-berlin.de/rmcichy/>

Awards:

2024: ERC Consolidator Grant TRANSFORM: A theory and model of the neural transformations mediating human object perception

2022: Early Career Impact Award from the Federation of Associations in Behavioral and Brain Sciences (FARBS)

2020-2024: Scout of the Henriette Herz Scouting Programme of the Alexander von Humboldt Foundation

2020: Neuroimage Paper of the Year

2019 Fellow of the Research Group “Cognitive Behavior of Humans, Animals and Machines: Situation Model Perspectives” (Center for Interdisciplinary Research, University Bielefeld)

2018: European Young Leader Class (Friends of Europe)

2018: ERC Starting Grant CRACK: Cracking the code of human object vision

Key publications:

Xie S, Singer JJD, Yilmaz B, Kaiser D*, **Cichy RM*** (2024) *The representational nature of spatio-temporal recurrent processing in visual object recognition*. bioRxiv; doi: 10.1101/2024.07.30.605751.

Lahner B, Dwivedi K, Iamshchinina P, Graumann M, Lascelles A, Roig G, Gifford AT, Pan B, Jin S, Murtz NAR, Kay K, Oliva A*, **Cichy RM*** (2024) *BOLD Moments: modeling short visual events through a video fMRI dataset and metadata*. Nat Comm 15: 6241; doi: 10.1038/s41467-024-50310-3.

Chen L, **Cichy RM***, Kaiser D* (2023) *Alpha-frequency feedback to early visual cortex orchestrates coherent natural vision*. Sci Adv 9(45): eadi2321; doi: 10.1126/sciadv.adi2321.

Graumann M, Ciuffi C, Dwivedi K, Roig G, **Cichy RM** (2022) *The spatiotemporal neural dynamics of object location representations in the human brain*. Nat Human Behav 6: 796–811; doi 10.1038/s41562-022-01302-0.

Xie S, Kaiser D, **Cichy RM** (2020) *Visual Imagery and perception share neural representations in the alpha frequency band*. Curr Biol 30(13): 2621-2627. doi: 10.1016/j.cub.2020.04.074.

Cichy RM, Oliva A (2020) *A M/EEG-fMRI Fusion Primer: Resolving Human Brain Responses in Space and Time*. Neuron 107(5): 772-781; doi: 10.1016/j.neuron.2020.07.001.

Cichy RM & Kaiser D (2019) *Deep neural networks as scientific models*. Trends Cogn Sci 23(4): 305-317; doi: 10.1016/j.tics.2019.01.009.

Cichy RM, Khosla A, Pantazis D, Torralba A, Oliva A (2016) *Comparison of deep neural networks to spatio-temporal cortical dynamics of human visual object recognition reveals hierarchical correspondence*. Sci Reports 10(6): 27755, doi: 10.1038/srep27755.

Cichy RM, Pantazis D, Oliva A (2014) *Resolving human object recognition in space and time*. Nat Neurosci 17(3): 455-462; doi: 10.1038/NN.3635.

Please note:

In a first step, the complete application should be uploaded to the online portal (<https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbd5/eng>) for evaluation by January 15th, 2025.