



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 2024**

Department/Institute: | Department of Education and Psychology |

Subject area: | Cognitive psychology, cognitive neuroscience,
computational neuroscience |

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

Number of open PhD positions: | 1 |

Type of the PhD Study: | 1 full-time |

Project title: | Topological analysis of visual population responses in the
human brain |

PhD Project description:

Humans recognize everyday visual objects without effort and in the blink of an eye. How does the human brain mediate this fascinating ability? Empirical work has highlighted the role of the so-called ventral visual stream in adult vision, a set of interconnected regions that transform visual information in a step-wise processing cascade in space and time. However, a computational understanding of the transformations in the brain that computationally lead from a representation at one step to the next step is missing. The goal of the PhD position is to reveal the transformations mediating vision in humans. The main approach is topological analysis of the representational spaces of population responses as measured with human non-invasive neuroimaging data. The work has a focus on modelling and analysis, but also involves empirical work in the form of brain data acquisition.

Language requirements:

- IELTS: 6,5 or TOEFL: 95 ibt
- Or
- Test Daf 16 or DSH 2

Academic requirements:

Suitable subject areas: cognitive science, cognitive neuroscience, psychology, or related

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:

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

2020-23: 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

2016: Emmy Noether Award of the German Research Foundation: Neural dynamics of visual perception

Key publications:

Chen L, **Cichy RM***, Kaiser D* (accepted) *Alpha-frequency feedback to early visual cortex orchestrates coherent natural vision*. Sci Advances.

Xie S, Hoehl S, Moeskops M, Kayhan E, Kliesch C, Turtleton B, Köster M*, **Cichy RM*** (2022) *Visual category representations in the infant brain*. Curr Biol 32(24):5422-5432.e6; doi: 10.1016/j.cub.2022.11.016.

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.

Hebart MN, Bankson BB, Harel A, Baker CI*, **Cichy RM*** (2018) *Representational dynamics of task context and its influence on visual object processing*. eLife 2018; 7:e32816, doi: 10.7554/eLife.32816.

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 \(https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbc5/eng\)](https://fuberlin.moveon4.de/form/60acfece5d328710e40bdbc5/eng) for evaluation by January 15th, 2024. Please do not contact the professor before. He/she will get in contact with you after having received the complete application via the International Office of Freie Universität Berlin in January.