



PhD-Position (m/w/d) in “Neural and Cognitive Principles of Representation Learning”

The Max Planck Research Group on “Computational Principles of Intelligence” at the Max Planck Institute for Biological Cybernetics in Tübingen, Germany, is looking to fill a fully-funded PhD-position (m/w/d) to work on the principles of representation learning.

About the position:

We are looking for a PhD-student to join our lab to work on the principles of representation learning, **starting as early as January 2021** (negotiable). When searching for rewards, we use representations of the world, organized like a map of the environment, to inform us about how to behave in novel scenarios. How do these representations emerge and how are they shaped by the characteristics of different decision problems? How does learning over multiple tasks change how these representations are formed? The ideal candidate should hold a MSc degree in cognitive neuroscience, computational neuroscience, cognitive science, computer science, statistics, or any other computational field. Experience with computational (reinforcement learning), neuroscientific (fMRI), and experimental methods would be a plus.

Project-related references:

- Wu, C.M., Schulz, E., Garvert, M.M., Meder, B & Schuck, N. (2020). Similarities and differences in spatial and non-spatial cognitive maps. *PLOS Computational Biology*.
- Tomov, M., Schulz, E. & Gershman, S.J. (2020). Multi-task reinforcement learning in humans. *Nature Human Behaviour*
- Garvert, M.M., Dolan, R.J. & Behrens, T.E.J. (2017). A map of abstract relational knowledge in the human hippocampal–entorhinal cortex. *Elife*.
- Kaplan, R., Schuck, N.W. & Doeller, C.F. (2017). The role of mental maps in decision-making. *Trends in Neurosciences*.

About the group:

The group (PI: Eric Schulz) conducts research on the fundamental principles of human intelligence. Our goal is to build and test comprehensive theories of the human ability to generalize from little data, to explore efficiently, and to find approximate solutions to complex problems. Our research methods include laboratory and online experiments, computational modeling, machine learning, fMRI, interactive games and developmental research. You can learn more about our research at cpilab.org

About the institute:

The Max Planck Institute for Biological Cybernetics investigates information processing in the brain. The Institute is multidisciplinary, has excellent facilities and outstanding infrastructure, is closely linked to sister Max Planck Institutes and the University of Tübingen, and offers a superb international research environment operating in the English language. More details can be found here: kyb.tuebingen.mpg.de

About Tübingen:

Tübingen is a scenic medieval university town. The quality of life is exceptionally high and the atmosphere is both tolerant and inclusive. Knowledge of German is not required to live here. Tübingen offers excellent research opportunities due to four Max Planck institutes, the University, and several companies focusing on machine learning research. You can find out more about Tübingen here: tuebingenresearchcampus.com

How to apply:

Please email a cover letter, CV, transcripts, and email addresses of 3 referees to eric.schulz@tuebingen.mpg.de.

The application deadline is August 21st 2020. If you have any questions about the position, the research group, or anything else, please do not hesitate to contact us directly. The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such qualified individuals. The Max Planck Society strives for gender equity and welcomes applications from scientists from all backgrounds.