



The “[Human and Machine Cognition](#)” lab led by Dr. Charley M. Wu in collaboration with the “[Neuro-Cognitive Modeling](#)” Group led by Prof. Dr. Martin Butz invite applications for an open

PhD position (m/f/d; E13 TV-L, 65%, 3 years)

on the topic of **compositional reasoning**. From exploring variations of a musical motif to generating entirely new sentences or inventions, humans are able to leverage previously learned structures and generalize them to novel contexts. Our aim is to build computational models that capture the human ability to acquire and reuse compositional structures from experience, and apply these structures to novel situations in a one-shot, goal-directed manner. Potential topics include:

- The role of inductive biases in inferring hidden structure from sparse examples
- Adapting behavior to latent contexts through event-predictive cognition
- Compositional Theory of Mind for decomposing the inferred goals of other agents and extracting individually relevant subgoals

in addition to the interests of the candidate.

About the position:

The candidate should hold a MSc degree in cognitive science, computer science, psychology, computational neuroscience, statistics, or a relevant discipline. The ideal candidate should be self-motivated, comfortable with both analytic and critical thinking, and have a passion for science. Please indicate in your application if you have prior experience with conducting experiments, computational modeling, machine learning, and/or neuroimaging (EEG/fMRI). Skills in computer programming languages (e.g., Python, R, Matlab, Javascript, Java, etc.), mathematics, writing (in English), and the ability to independently manage a project (of any type) should also be mentioned.

What we offer:

The position is funded by Cluster of Excellence “[Machine Learning: New Perspectives for Science](#)” and is embedded in the [Tübingen AI Center](#), which is the highest ranked academic institution in artificial intelligence in the European Union. In addition, the position is also part of a network project within the ML cluster, providing a rich interaction structure with other researchers working on a similar topic, including members of the MPI Biological Cybernetics and MPI Intelligence Systems.

About Tübingen:

Tübingen is a scenic university town on the Neckar river in South-Western Germany. The quality of life is exceptionally high and the atmosphere is diverse, inclusive, and most locals speak English. Tübingen offers excellent research opportunities due to the University, four Max Planck institutes, the University Hospital, and Europe’s largest AI research consortium. You can find out more about Tübingen here: <https://www.tuebingen.de/en/>

How to apply:

Please send a cover letter, a research statement describing your relevant interests (max 1 page), your CV, the names and email addresses of 2-3 referees, and unofficial copies of your University degrees *as a single PDF* to Charley Wu (charley.wu[at]uni-tuebingen[dot]de). If not included in your CV, please also include links to publicly available code examples (e.g., github, OSF, etc...). The university seeks to raise the number of women in research and teaching and therefore urges qualified women academics to apply for these positions. Equally qualified applicants with disabilities will be given preference. The employment will be carried out by the central administration of the University of Tübingen. Please submit your application by **August 15th, 2022**.