

## **Two PhD positions (75%, TV-L E 13, 3 years) at the intersection between computational linguistics/NLP, cognitive science, and experimental (social) psychology**

We are offering two 3-year positions for PhD students at Humboldt Universität zu Berlin, Germany, within the Emmy-Noether project “What’s in a name?”, funded by the German Research Foundation.

The aim of this project is to examine our name choices for (new) objects or concepts we encounter – why do we pick certain names instead of others, and what are the consequences of these choices? That is, we want to understand the relation between words – supposedly arbitrary labels – and (our mental representations of) the described concepts. This question will be investigated from a computational as well as cognitive perspective, combining methods and approaches from computational linguistics/NLP, cognitive science, and experimental (social) psychology. A summary of the project can be found at the end of this document.

Successful applicants will have a strong background in computational linguistics/NLP and genuine interest in cognitive science, or a strong background in cognitive science/psychology and solid base of computational skills. Ideal candidates have a degree in a relevant scientific field, such as computer science, computational linguistics, NLP, cognitive modelling, cognitive science, experimental psychology, or social psychology. Since it will be an inherent part of the day-to-day work, coding experience (for example, in R, MATLAB, Python, or C++) is expected, and a certain passion for it surely is an asset.

Emmy-Noether projects are independent junior research groups lead by qualified early-career researchers; this particular project is lead by Fritz Günther ([www.fritzguenther.de](http://www.fritzguenther.de)), in collaboration with the research group “neurocognitive psychology” lead by Rasha Abdel Rahman ([www.psychology.hu-berlin.de/en/profship/nk](http://www.psychology.hu-berlin.de/en/profship/nk)). Our aim is to create a research and work environment that encourages self-development and -fulfilment, self-organization, self-determined working, curious exploration, and cooperation, while at the same time providing personal and professional support, guidance, an open, interactive culture of communication, and a healthy work-life balance.

The project (and the PhD positions) will start on December 1<sup>st</sup>, 2021, for an initial term of 3 years (with the possibility for a 3-year extension after the first funding period). The gross salaries are set at 75% TV-L (West) E13 ([oeffentlicher-dienst.info/c/t/rechner/tv-l/west?id=tv-l-2021&matrix=1](http://oeffentlicher-dienst.info/c/t/rechner/tv-l/west?id=tv-l-2021&matrix=1); usually starting at level 1), and – as German public service positions – many social securities are included.

The Humboldt University is one of Germany’s leading and most prestigious universities, and one of the select “Universities of Excellence” of the German Universities Excellence Initiative. The facilities of the department of psychology are located at Adlershof in the southeast of the city. Berlin itself is a lively, buzzing European capital, offering a wide range of leisure activities especially for young adults, and is surrounded by a wonderful lake district.

We are committed to creating a safe and inclusive research environment for all of its members. Women and people of marginalized communities – including persons with a migration background – are strongly encouraged to apply. Severely disabled applicants with equal qualification will be given particular consideration.

If you are interested in one of these positions, please apply by sending a mail to Fritz Günther ([fritz.guenther@hu-berlin.de](mailto:fritz.guenther@hu-berlin.de)), including your CV, the name and contacts of a professional reference such as thesis supervisors or scientific collaborators, and briefly explain in the mail itself why you are interested in the position. If possible and available, please also attach a piece of work demonstrating your qualification, such as a master thesis, scientific publication, conference contribution, or even pieces of software or GitHub projects you created.

## Project summary

### **What's in a name? Computational modeling and experimental investigations on the non-arbitrariness of word label choices**

It is traditionally assumed that words are assigned to concepts as arbitrary labels. In reality however, labels are always selected in a specific linguistic, historical, and social context, which informs and restricts label choices: For example, the existence of the word “phone” makes it very sensible to use the word “mobile phone” for a portable phone. On the other hand, labels almost always bring with them certain connotations and implications: the German “Völkerwanderung” describes the exact same concept as the Italian “invasione barbariche”, but the associations are quite different. In the project proposed here, we plan to investigate both sides of this phenomenon – why do we pick the labels we choose, and what are the consequences of these choices – from a cognitive point of view.

To this end, central properties of both existing and novel words – related to their form and especially their meaning – will be represented in an objective and quantitative manner, by employing recent developments from the artificial intelligence field of natural language processing. Thus, combining computational modelling techniques with experimental methodology from general and social psychology, the present project aims at establishing a comprehensive theoretical framework for the choice and implications of word labels.

The project consists of three major work packages. The studies of the first work package investigate when and which new word labels are coined by speakers. On the one hand, this includes examining the concept properties and contexts that lead speakers to generate a new label for a given concept. On the other hand, it includes predicting which labels are chosen, with the aim of establishing a computational model for the goodness/adequacy of labels given a concept. The methods of the first work package range from large-scale corpus studies over observation of natural communication to various signaling game-paradigms.

The studies of the second work package examine direct social influences on label choices, since labels are always a social convention of a speaker community. The main factors of interest here are variables connected to the interaction partners in a social setting where both partners start with different labels for the same concept (such as their willingness to accept new labels, or their social status). The studies of this work package thus employ methods from social psychology in personal communication settings to examine how such social factors interact with the “goodness of labels” to determine which label is finally adapted by a speaker.

Finally, the studies of the third work package investigate the implications and connotations of labels, in terms of semantic association, affective evaluation, and sensory perception. In these studies, where different labels for the very same concept will be presented to different speakers, we aim at predicting the connotations from the quantitative properties of the word labels.