<u>Research Group Prof. Dr. Jonas Rose</u>

Master Project 1: Categorization Learning in Birds

We are constantly surrounded by an endless number of different objects. In order to efficiently handle this rich sensory input, we automatically categorize objects based on either visual similarity (all bikes look similar), or more semantic rules (bikes, motorcycles, cars – all represent a vehicle that can be used for transportation). Also animals respond categorically (e.g. to predators or potential mating partners), and they are even able to form highly abstract categories in an experimental setting (such as 'same' vs. 'different', numerosity, 'fit' vs. 'no-fit'). We have developed an artificial stimulus set in order to study categorization learning in birds: RUBubbles consist of an arbitrary number of colored spheres that are arranged in 3D. Using different category learning paradigms, such as prototype- or exemplar-based strategies, we are able to investigate the mechanisms and characteristics of categorization learning.

In this project you will design RUBubble category sets using available Matlab code, train birds on a delayed match to category paradigm using various experimental adjustments, analyze behavioral data, and potentially perform extracellular recordings in distinct brain regions of the categorization network.

In this project, it is possible to pursue a very wide range of experimental questions concerning categorization and categorization learning. For example, the experimental question can also be adapted to investigate categorical perception within a RUBubble continuum.

Methods:

- Design of the behavioral protocol
- Animal training and testing
- Modern neurophysiological techniques
- Data analysis (Matlab, some experience is very beneficial)
- Assistance during surgeries

Supervision: Prof. Dr. Jonas Rose

Master Project 2: Spatial Cognition in Corvids

If you are interested in a Master project about spatial learning in corvids, please contact jonas.rose@rub.de.

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