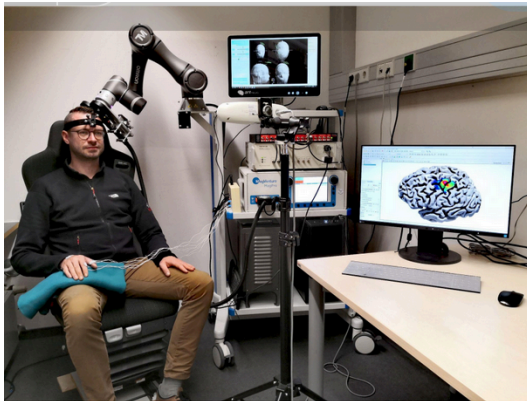


Integration of a Robotic Arm with a Neuronavigation System for Non-Invasive Brain Stimulation

This internship focuses on a project aimed at integrating a **robotic arm** with a neuronavigation system specifically for **Transcranial Magnetic Stimulation (TMS)**, an established non-invasive brain stimulation method. TMS uses **electro-magnetic fields to modulate neural activity** in specific brain regions, offering possibilities for therapeutic applications and unique insights into causal structure-function relationships. Here, we want to **automate the positioning of the TMS coil** with robotic precision, **enhancing the accuracy and consistency** of treatments and research applications.

This project is critical for advancing the precision of TMS by ensuring targeted stimulation with minimal variability, thus improving experimental reliability and patient outcomes. The integration of these technologies stands to significantly improve TMS practices by providing **more accurate, repeatable, and efficient therapeutic interventions**.



Key Objectives

- Program and configure a robotic arm to align with neuronavigation tailored for TMS.
- Develop and implement precise calibration protocols for seamless integration.
- Document the integration process and develop operational protocols for future use.

Requirements

- Background in engineering, robotics, computer science, or a related field.
- Proficient in Python, with a strong interest in robotics and automation.
- Experience with robotic systems, TMS, or neuronavigation is highly desirable.
- Strong analytical skills and attention to detail.

Benefits

- Engage in pioneering research at the interface of robotics and neuroscience.
- Gain valuable hands-on experience with robotic systems and neuronavigation tools.
- Collaborate with a team of experts at the Max Planck Institute for Human Cognitive and Brain Sciences.
- Potential for contributing to scientific publications.

Application Process

To apply, please send your CV, a brief statement of interest, and academic transcripts (English or German) to Dr.-Ing. Dipl.-Psych. Ole Numssen.

Dr.-Ing. Ole Numssen
Methods & Development Group Brain Networks
Research Group Cognition and Plasticity
Max-Planck-Institute for Human Cognitive and Brain Sciences, Leipzig
numssen@cbs.mpg.de | @numOle

