Thesis Project Offer

Joint Research and Education Programme “Palestinian-German Science Bridge PGSB”
Forschungszentrum Jülich GmbH & Palestine Academy for Science and Technology

Thesis type*
☐ BSc ☒ MSc ☒ PhD

Intended starting date (approx.):

Contact details of supervisor/responsible host at Forschungszentrum Jülich
Title* Degree First name* Surname*
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Function* Institute and homepage of institute*

University affiliation in Germany*
RWTH University Aachen

Co-Supervisor at Palestinian university (if applicable)
Title Degree First name Surname
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University/institution Department/faculty/institute

Project description*

Simultaneous MR-PET-EEG Imaging – Multimodal Data Integration

The modalities of MRI, PET, and EEG were combined into a single trimodal approach in order to best utilize the complementary spatial and temporal features about neuronal activation revealed by each modality. The trimodal imaging set up yields high spatial resolution MR images, high temporal resolution EEG signals and metabolic PET images acquired simultaneously on a single scanning session (Shah, ..., Neuner, Nature Sci Reports 2017).

Various projects are planned and being implemented using the trimodal setup in our institute with different radiotracers like 18F[FDG], 11C-Raclopride, 11C – Flumazenil and 11C – ABP686. One of the main difficulties in trimodal approach is integration of data recorded at different spatial and temporal resolution. We are looking for project partners for multimodal data integration using multivariate data analysis methods or advanced machine learning techniques.

Imaging methods will be extended to portable simultaneous NIRS (near infrared spectroscopy) / EEG (electroencephalography).

Imaging data will be combined with clinical data and genetic data with a strong focus on epigenetic patterns. Genetic data will be analyzed in close cooperation with Prof. Kurth and Prof. Eggermann.
from the Department of Genetics, Medical Faculty, RWTH Aachen University, Germany. On a behavioral level the concept of resilience will be a major focus. Within the scope of various ongoing trimodal projects, cooperation projects / Master’s / PhD thesis can be planned and adapted according to project partner’s/student’s research background and interests.

Only students who are pro-active and capable of independent work with good programming knowledge and have interest in science and research are invited to apply. Also students or graduates with experience in the field of psychology, neurology, psychiatry or genetics are invited to apply. Motivated project partners / students are welcome to contact us to discuss available projects. Informal discussions are strongly encouraged; please contact Prof. Dr. med. Irene Neuner ineuner@ukaachen.de or i.neuner@fz-juelich.de

Date* | Signature*
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29.01.2018 | Irene Neuner

* required field