

JOB OFFER

Position in the project:	PhD Student_3
Scientific discipline:	Psychological sciences/
Job type (employment contract/stipend):	Scholarship
Number of job offers:	1
Remuneration:	3 800 PLN monthly (+ 3 800 PLN monthly to spent on internships, trainings and workshops)
Position starts on:	1 March 2020
Maximum period of contract/stipend agreement:	3 years
Institution:	Jagiellonian University, Cracow
Project leader:	Jacek Tabor
Project title:	Bio-inspired artificial neural networks <i>Project is carried out within the TEAM-NET programme of the Foundation for Polish Science</i>
Project description:	Artificial neural network model was created basing on analogies to biological counterparts, such as a simplified model of the neuron or a system of retinal neurons. Due to the increasing complexity of tasks and problems with the development of effective methods for learning deep neural networks, solutions based on algebraic structures dominate Today, advanced approaches in machine learning such as deep learning show a number of undesirable features, such as forgetfulness, susceptibility to adversarial examples, the requirement for a large training set, and slow learning. Most of these features do not occur in biological systems, thus it would be beneficial to take an inspiration from them to help training artificial systems. The aim of the project is to analyze high-level behaviors of biological neural systems and to build innovative artificial models by proposing new paradigms of learning and new architectures of computational models.

The Jagiellonian University will run six research groups: Cognitive group (leader Tadeusz Marek), Physics-group (leader Maciej A. Nowak), Machine-learning group, Neuro-group, BioDataScience-group, InfoTech-group.

We seek for the PhD student in Cognitive group, specializing in the EEG research.

The broad aim of the group would be to acquire the resting state fMRI, neurological, psychological, and behavioral data of 150 patients diagnosed with multiple sclerosis (MS) and 50 healthy controls during two sessions in regard to their psychophysiological state. As a result, data from 400 individual scans of patients in various stages of MS disease will be collected. In particular, the goal is to prepare the data for the further stage of analyzes carried out by other groups acting within project as well as conducting own analyzes allowing to determine the typology of changes in the restructuring of neural networks in patients and healthy subjects during the process of learning. Moreover, the relationship between mental exhaustion and resting state brain activity in MS patients and healthy subjects will be estimated. Additional goal would be to evaluate dynamic network reorganization during performing a task with the use of electroencephalography.

Key responsibilities include:

PhD student will be engaged in the EEG part of the research project and will be responsible for:

1. supporting the process of planning and conducting experiments using dense-array EEG system, including collecting the resting-state and task-related data.
2. supporting the process of dense-array EEG data processing and analysis, including the analysis of resting-state data and learning-related changes in neural activity.
3. supporting the process of data pre-processing in order to create bio-inspired neural networks.
4. supporting the process of manuscript preparation.
5. dissemination of the obtained result during the scientific conferences.

Profile of candidates/requirements:

We are looking for the highly motivated candidate with a strong interest in the EEG research.

1. Familiarity with the EEG technique – preferably using dense-array 256-channel EGI Geodesic system – is a must.
2. Prior experience in programming in Matlab and R environment is an advantage
3. Proven previous engagement in research/scientific projects within the field of AI or/and EEG.
4. Good command in both written and spoken Polish and English is a must.
5. Experience in operating the Pupilometer and Light Stimulator (Ober Consulting - chromatic pupillometry system)
6. A candidate for a PhD student scholarship with MA degree in Psychology (copy of MA diploma, candidate must have a PhD student status during the contract).

Required documents:	<ol style="list-style-type: none"> 1.Application 2.Curriculum vitae. 3.Documents proving experience and background (points from 1 to 6 in the profile of candidate). 4.Opinion from current scientific supervisor. 5.Statement of knowledge and acceptance of intellectual property rules and legal protection. 6.Information about processing of personal data. 7.Personal questionnaire. <p>The recruitment committee reserves the right to conduct an interview with selected candidates</p>
We offer:	<ol style="list-style-type: none"> 1. Cooperation with the multidisciplinary research team 2. Scholarship of PLN 3 800 3. dedicated funds supporting participation in meetings, scientific exchanges and other forms of doctoral training 4. Access to computing infrastructure. 5. Mentorship during the preparation of the PhD thesis.
Please submit the documents to:	wziks.projekty@uj.edu.pl
Application deadline:	13 January 2020
General rules of the requirement process	<ol style="list-style-type: none"> 1.Candidates can apply at the same time for all positions offered by the project. It must be reported on the application form. 2.The decision will be taken by the Recruitment Committee established at the Faculty of Management and Social Communication at the Jagiellonian University. 3.The Recruitment Committee reserves the right to invite selected candidates for the interview. 4.The recruitment interview can be carried out between 20 and 22 of January 2020. 5.The Recruitment Committee reserves the right to close the contest without selecting a candidate. 6.The results of the competition will be announced until 23/01/2020.
For more details about the position please visit	bionn.matinf.uj.edu.pl
Euraxess job/stipend offer (in case of PhD and postdoc positions):	PhD Student (EURAXESS Job Offer id: 472297)

Due to the entry into force of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, we also require that by applying, a candidate expresses his/her consent to the processing of his/her personal data needed for the recruitment process by the Jagiellonian University.

