MEi:CogSci Projects for Specialisation

Effective September 2021

Projects at the Comenius University in Bratislava

Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
Grounding abstractness Igor Farkas, prof. Dept. of Applied Informatics, Faculty of Math, Physics and Informatics, CUB web	Abstract concepts lie at the core of human cognition, providing it with an immense potential for thinking. Yet, understanding abstractness remains an open challenge in cognitive science, despite an outburst of recent papers published on the topic. The goal of the project is to survey the field and propose a representational framework for concrete and abstract concepts that would lend itself to connectionist implementation, and could be simulated in a smaller domain of words.		This project is a good opportunity for joint work. One student should have a background in psychology, or linguistics, and the other one experience with machine learning and/or programming.	2	S-I
Connectionist modeling in cognitive robotics Igor Farkas, prof. Dept. of Applied Informatics, Faculty of Math, Physics and Informatics, CUB web	The goal will be to implement, simulate and analyse a small neural network model of a chosen agent component. Details will be specified individually.		Systematic work, programming skills. Knowledge of artificial neural networks and reinforcement learning is an advantage.	1-2	S-I

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
Automated data analysis for qualitative research Martin Takac, assoc. prof. Dept of Applied Informatics, Faculty of Math, Physics and Informatics, CUB web	Amount of textual data in qualitative research in social analysis would benefit from automated analysis. However, coding and analyzing free text is hard, and the tools are usually developed by machine learning people without much domain knowledge. Bridging the insight from social scientists with the expertise of ML people in a dialog could lead to much better tools and also mutual understanding. The goal of this project is to map the domain, identify key concepts, design a suitable representation formalism and in an ideal case also implement a software tool for qualitative research.		One of the students should have reasonable programming skills. Some knowledge of machine learning and natural language processing welcome, but not mandatory. The other student should ideally have background in social sciences with some knowledge of qualitative methods (again, welcome, but not mandatory).	2	S-I
Cognitive and brain mechanisms of controlled semantic cognition Martin Marko, PhD Dept of Applied Informatics, FMPI / Dept of Behavioral Neuroscience, INPP web	Project focuses on the mechanisms and correlates of domain-general and domain-specific control of semantic processing. This assignment involves experimental manipulation and cognitive assessment of semantic measures in healthy participants. Optionally, the project may include non-invasive transcranial electrical brain stimulation (tES).		Experience in experimental research and quantitative methodology is an advantage.	1-2	S-I
Brain simulation, sensory gating and cognitive inhibition Igor Riecansky, PhD Institute of Normal and Pathological Physiology, Slovak Academy of Sciences, Bratislava web	Cognitive inhibition is essential for goal-directed behavior. This project will investigate the possibilities of modulating brain inhibitory processes using non-invasive transcranial direct current brain stimulation. An experimental approach will be adopted using behavioral and electrophysiological methods (EEG, EMG).		Experience in experimental research and quantitative methodology is an advantage.	1	S-I

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
Role of emotions in accepting epistemically suspect beliefs Vladimira Cavojova, PhD Institute of Experimental Psychology, Slovak Academy of Sciences web	The aim of the project is to identify the role of emotionality in accepting epistemically suspect beliefs ESB, particularly to what extent do fear and anxiety motivate the rise, acceptance and dissemination of these beliefs, what is the relation to individual variables such as anxiousness, what is the effect of situational variables or individual experience – e.g., traumatizing experience (Bonanno & Jost, 2006), or experienced insecurity, lack of control, and such (Chapman University, 2016).		Background in psychology is an advantage	1	S-I
Theories of Mindreading Juraj Banovsky, PhD Dept of Applied Informatics, Faculty of Math, Physics and Informatics, CUB web	Examination of current theoretical approaches in the research of theory of mind. Review and critical appraisal of relevant studies on social cognition from the perspective of "4E" theories of cognition as well from the perspective of "classical" approaches (simulation, theory-theory).	-		1	S-I
Agenticity and intentionality in forming epistemically suspect beliefs Vladimira Cavojova, PhD Institute of Experimental Psychology, Slovak Academy of Sciences web	The aim of the project is to replicate the research by Douglas et al. (2014) who found out that agenticity and intentionality plays role in acquiring conspiracy beliefs and extend it to other relevant epistemically suspect beliefs.		Background in psychology is an advantage	1	S-I

Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
Barriers of people's climate change beliefs and pro-environmental behaviors Jakub Šrol, PhD. Institute of Experimental Psychology, Slovak Academy of Sciences web	Despite the fact that people around the world voice their concern over negative consequences of climate change, their actual engagement in pro-environmental behavior is rather low. Researchers uncovered many barriers that people report as reasons for not engaging more with environmental issues, spanning from the lack of understanding of climate change, resulting from cognitive biases that increase psychological distance from the issue, or barriers driven by feelings of helplessness and guilt. The aim of the project is to gain further insight into barriers of people's climate change beliefs and pro-environmental behaviors, and to find ways to improve people's engagement with this issue.		Background in psychology is an advantage	1-2	S-I
Nature of human consciousness Silvia Galikova, prof. Institute of Philosophy, Slovak Academy of Sciences web	Main objective of the project is to reconsider novel experimental and theoretical models, theories on the status and function of conscious experience.		Background in the philosophy of mind is an advantage	1	S-I
Role of emotions in accepting epistemically suspect beliefs Vladimira Cavojova, PhD Institute of Experimental Psychology, Slovak Academy of Sciences web	The aim of the project is to identify the role of emotionality in accepting epistemically suspect beliefs ESB, particularly to what extent do fear and anxiety motivate the rise, acceptance and dissemination of these beliefs, what is the relation to individual variables such as anxiousness, what is the effect of situational variables or individual exprience – e.g., traumatizing experience (Bonanno & Jost, 2006), or experienced insecurity, lack of control, and such (Chapman University, 2016).		Background in the JDM is an advantage	1	S-I

Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
Investigation of the role of spontaneous activity in heterosynaptic plasticity Lubica Benuskova, prof. Dept. of Applied Informatics, Faculty of Math, Physics and Informatics, CUB web	Long-term potentiation (LTP) and long-term depression (LTD) of synaptic efficacy is considered to be the synaptic mechanim of long-term memory. The ability of high-frequency stimulation (HFS) to induce LTP of all major excitatory synaptic pathways in hippocampus is well-characterized. At the same time, neighbouring pathways exhibit heterosynaptic LTD. The goal of the project is to investigate the hypothesis that spontaneous activity of neurons is necessary for heterosynaptic LTD. This can be done either by computational model or by writing a review of experimental research articles that deal with this problem.		In case of computational investigation, programming in C++ required	1	S-I
Studying the effects of motor training on cognition using mixed reality Roman Rosipal, PhD Institute of Measurement Science, Slovak Academy of Sciences, Bratislava web	The objective is to study usefulness and applicability of the motor training using mixed reality focused on the rehabilitation of patients after stroke. The project will involve pilot testing of an experimental protocol with a patient.		Systematic work, programming in Matlab or Python is an advantage	1-2	S-I
Development of beliefs by artificially modulated states of mind Tomas Gal, PhD IT Department, VM Mlyny, CUB web	Research into altered states of mind, done by various methods, like dance, meditation or stress.		Background is psychology is an advantage	1	S-I

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Project	Description	COVID-19 circumstances (comments)	Qualifications	Places	Level
AI biases Tomas Gal, PhD IT Department, VM Mlyny, CUB web	Analysis of AI facial and voice recognition systems shows vulnerabilities to biases and errors introduced by both, its human designers and the data used to train the AI systems. We may extrapolate, that similar vulnerabilities are in play also in other types of problem-solving scenarios, including medical and financial assisting AI. This research projects focus on two major question (1) whether the AI should by stripped from all human-like biases and (2) if not, what kind of moral compass should be implemented. Practical output of this research will be a conceptual model of economically profitable ethical AI.		Background in psychology or philosophy is an advantage.	1-2	S-I
Human being and information technology Emil Visnovsky, prof. Faculty of Philosophy, Comenius University web	Project will focus on the analysis and functions of information technology and its varieties in human life from a philosophical point of view based on contemporary cognitive science and AI.			1-2	S-I

Projects at the Eötvös Loránd University

Project	Description	Qualifications	Places	Level
Neurocognitive mechanisms of speech perception, reading, music Ferenc Honbolygó ELTE, Department of Cognitive Psychology & Research Group of Neurocognitive Development, Hungarian Academy Sciences web	Investigating the neurocognitive mechanisms of speech perception, reading, music, implicit learning and cognitive control in adults, children and infants, with a special focus on clinical and developmental aspects, using the latest techniques of brain imaging (EEG, fMRI).	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
The role of oscillations in perceptual processes using EEG, Spatial cognition, Time perception Zoltán Nádasdy ELTE, Department of Cognitive Psychology web	• The role of oscillations in visual perception (an EEG study) • Visual consciousness • Human development of spatial cognition and its relationship to Theory of Mind • Time perception and cognitive representation of time • The neuronal phase-code	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Comparative analysis of social cognition in dogs and humans: Family dog project Adam Miklosi ELTE, Department of Ethology web	• Comparative analysis of social cognition in dogs and humans: Interdisciplinary approach • Studying cognitive aging in dogs (researcher: Eniko Kubinyi) • Interspecific attachment in cats to humans (researcher: Marta Gácsi) • Bioacoustic analysis of vocal communicative signals in dogs (researcher: Tamás Faragó)	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	2-4	S-I MA

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Project	Description	Qualifications	Places	Level
Neglect syndrome in dogs [Anna Kiss](#) MTA TTK, Hungarian Academy Sciences [web](#)	Description of the neglect syndrome in dogs (using the side preference phenomenon known from cognitive tests as a starting point).	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Social learning and social cognition in infants [Ildiko Kiraly](#) ELTE, Department of Cognitive Psychology [web](#)	Behavioral and eye-tracking studies in the field of Cognitive development	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Cross-cultural research on The Evolution of Laws [Ildiko Kiraly](#) ELTE, Department of Cognitive Psychology [web](#)	We recently found that the justice intuitions American and Indian MTurk participants have with respect to a given offense (e.g., theft, fraud, sexual offense, manslaughter, etc.) positively correlate with the actual legal punishments provided for that offense by actual laws sampled from actual criminal codes. This project seeks to replicate and extend our recent findings, but now with participants from a large sample of very diverse national cultures.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Infant directed speech in dogs [Anna Gergely](#) ELTE, Department of Ethology [web](#)	• Studies include dog human communication • mutual reactions to emotional behaviour • cognitive aging in dogs, etc.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA

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Project	Description	Qualifications	Places	Level
Numerical cognition Attila Krajcsi ELTE, Department of Cognitive Psychology web	• Elementary bases of number understanding • Development of number understanding • Methodological details of reaction time analysis	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Recommended data analysis and statistical analysis Attila Krajcsi ELTE, Department of Cognitive Psychology web	• Suggesting analysis paths for automatic data analysis software • Forming more informative data analysis output • Python coding of automatic data analysis software (www.cogstat.org)	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Meta-science / Open science Balázs Aczél ELTE, Department of Affective Psychology web	Various topics in meta-science, researching how research is done and how to improve it. Open science, transparency, and research integrity-related projects.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Executive functions in healthy, functioning & specific conditions Alexander Logemann ELTE, Department of Affective Psychology web	Elucidating the mechanism of executive functions (predominantly attention & inhibitory control).	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Sleep & Cognition Peter Simor ELTE, Department of Affective Psychology web	Studies investigate the mechanisms and processes of sleep and dreaming in healthy and pathological conditions.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA

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Project	Description	Qualifications	Places	Level
Cognitive abilities Lab [Kristof Kovacs](#) ELTE, Department of School Psychology [web](#)	Individual differences in cognitive abilities.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Cognitive vs. emotional flexibility [Renáta Cserjési](#) ELTE, Department of Affective Psychology [web](#)	• Measuring and comparing emotional flexibility with cognitive flexibility in healthy and sub – and clinical populations • Eating problems Improving emotional flexibility	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Human Interactions [Katalin Varga](#) ELTE, Department of Affective Psychology [web](#)	• Behavioural, emotional, phenomenological and psycho-physiological changes in participants of interpersonal situations.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Human Adaptation [Anna Veress-Szekely](#) ELTE, Department of Affective Psychology [web](#)	Study resilience using an interdisciplinary research approach, implementing multiple levels of analysis perspectives based on genetic, developmental, physiological, demographic, cultural, economic and social variables.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Sustainable behaviour [Barnabás Imre Szászi](#) ELTE, Department of Affective Psychology [web](#)	We conduct research in the field of science of sustainable behaviour change in several domains such as health, education, sustainability, and financial behaviour. We also work on projects related to the perception of economic inequality and poverty.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	Qualifications	Places	Level
Social cognition Bálint Forgács ELTE, Department of Cognitive Psychology web	Social cognition, mentalization, and language acquisition in infancy, investigated using EEG.	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA
Language processing Bálint Forgács **ELTE, Department of Cognitive Psychology** web	Figurative language processing investigated with EEG	Please, contact the project leader about the details (e.g. available places for students may be more than 2 for certain projects, available master thesis oportunities are also depend on the project).	1-2	S-I MA

Projects at the University of Ljubljana

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Cognitive neuroscience of working memory and cognitive control Anka Slana Ozimič, assist. prof., Nina Purg, PhD Department of Psychology, Mind and Brain Lab email: nina.purg@ff.uni-lj.si web: http://psy.ff.uni-lj.si/mblab/en	Multimodal study of working memory and cognitive control employing EEG, fMRI, eye-tracking, behavioral studies. Possible topics: Visual and spatial working memory; Cognition-emotion interaction; Working memory and cognitive control. See Mind and Brain Lab pages for other research opportunities: http://psy.ff.uni-lj.si/mblab/en/research. Supervisor: prof. Grega Repovš	Remote collaboration is also possible.	Solid foundations in experimental design and statistics are required. Prior experience with EEG, fMRI or eye-tracker is beneficial as well as python, Matlab and R programming skills. Contact the responsible (contact person) and state your interests. If interested in carrying out your own research project propose a detailed research plan. Also state if interested in extending the research project into master's thesis.	Places: 1-2 | Level: S-I & MA

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Brain connectivity studies Anka Slana Ozimič, assist. prof., Nina Purg, PhD Department of Psychology, Mind and Brain Lab email: nina.purg@ff.uni-lj.si web: http://psy.ff.uni-lj.si/mblab/en	The project involves data collection, development of tools for fMRI and EEG functional connectivity analyses and their application to existing and novel datasets. Supervisor: prof. Grega Repovš	Remote collaboration is also possible.	Intermediate to advance programming, analytical and statistical skills are required. Familiarity with Matlab, python and possibly Julia is desired. Contact the responsible (contact person) and state your interests. If interested in carrying out your own research project propose a detailed research plan. Also state if interested in extending the research project into master's thesis.	Places: 1-2 | Level: S-I & MA
Studying cognition with EEG/TMS (EEG and TMS Lab) Zvezdan Pritošek, prof. Contact person: Tina Štukelj University Medical Centre Ljubljana, Department of Neurology, Laboratory for Cognitive Neuroscience email: tina.stukelj@mf.uni-lj.si web: http://kobz.si/en/LCN.php	Specific topics/projects are dependent upon ongoing projects in the lab during the exchange semester. Supervisor: prof. Zvezdan Pirtošek	Physical presence is needed.	Contact the responsible (contact person) and state your interests. If interested in carrying out your own research project propose a detailed research plan. Also state if interested in extending the research project into master's thesis.	Places: 1-2 | Level: S-I & MA

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Neurological and neuropsychiatric disorders Zvezdan Pritošek, prof. Contact person: Tina Štukelj University Medical Centre Ljubljana, Department of Neurology, Laboratory for Cognitive Neuroscience email: tina.stukelj@mf.uni-lj.si web: http://kobz.si/en/LCN.php	Possible topics: Dementia, Parkinson's disease, Tourette's Syndrome, Depression, Schizophrenia. Specific topics/projects are dependent upon ongoing projects in the lab during the exchange semester. Supervisor: prof. Zvezdan Pirtošek	Address inquiries to the contact person.	Contact the responsible (contact person) and state your interests. If interested in carrying out your own research project propose a detailed research plan. Also state if interested in extending the research project into master's thesis.	Places: 1-2 | Level: S-I & MA
Predictors of deep brain stimulation outcome in movement disorders patients Dejan Georgiev, assist. prof. University Medical Centre Ljubljana, Department of Neurology, Laboratory for Clinical Neuroscience email: dejan.georgiev@kclj.si	We are collecting data for a study in which we are trying to determine electrophysiological (TMS and EEG) and imaging biomarkers (fMRI) of good outcome of DBS in patients with movement disorders.	Also possible in distance learning format (literature review).	TMS, EEG, fMRI skills recommended.	Places: 2 | Level: S-I & MA
Aubert-Fleischl phenomenon, Bradykinesia, Time Perception and dopaminergic medication in Parkinson's disease Dejan Georgiev, assist. prof. University Medical Centre Ljubljana, Department of Neurology, Laboratory for Clinical Neuroscience email: dejan.georgiev@kclj.si	The Aubert-Fleischl phenomenon describes a condition where the perceived velocity of a moving stimulus differs depending on whether the subject is following the stimulus with the sensory organ or the sensory organ is at rest. This phenomenon relates to time perception and also possibly to the mechanisms of bradykinesia.	Also possible in distance learning format.	Technical skills recommended.	Places: 3 | Level: S-I & MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Eye movement and cognitive abnormalities in patients with Parkinson's disease with and without heterozygous *GBA1* mutation Dejan Georgiev, assist. prof. University Medical Centre Ljubljana, Department of Neurology, Laboratory for Clinical Neuroscience email: dejan.georgiev@kclj.si	It is supposed that patients with PD do not have specific eye movement disorders, although some recent findings pint towards the possibility of bradyhypokinesia of eye movements in these patients. Regarding *GBA1*-PD, we do not know if ocular movement disorders are present in them.	Also possible in distance learning format.	Statistical skills recommended.	Places: 3 | Level: S-I & MA
The role of diaphragmatic movements and cognition in breathing abnormalities in PD and other parkinsonisms Dejan Georgiev, assist. prof. University Medical Centre Ljubljana, Department of Neurology, Laboratory for Clinical Neuroscience email: dejan.georgiev@kclj.si	Neurodegenerative diseases, including Parkinson's disease (PB), are often associated with motor control disorders, including respiratory disorders. Unlike other motor problems such as resting tremor, rigidly elevated tone, bradykinesia, and postural instability, respiratory disorders are poorly understood, their frequency is underestimated, despite their importance for patients with PD and parkinsonisms.	Possible distance learning (literature review)		Places: 2 | Level: S-I & MA
Electroencephalographic properties of clinical depression Jure Bon, M.D. Ph.D., assist. prof. Aleš Oblak, M.Sc. oblak.ales.93@gmail.com University Psychiatric Clinic Ljubljana	A long-term EEG project on the neurological properties of clinical depression. A combination of EEG and a behavioral task (n-back task) is used. Work is done both on the clinical population and healthy controls. To students interested in EEG analysis method, we can offer guidelines in analyzing event-related potentials (ERP) and neural time series analysis. Students are expected to assist with data acquisition. They must attend lab meetings (occasionally, they will be asked to present two recently published papers on the relevant topics).		No specific training required, although experience with conducting studies (e.g., delivering experiment instructions to participants) is preferred.	Places: 2 | Level: S-I

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Studying Cognition with EEG and TMS in health and psychiatric disorders Jure Bon, assist. prof. University Psychiatric Clinic Ljubljana email: jure.bon@psih-klinika.si	Studying Cognition with EEG and TMS (TMS Lab) in health and psychiatric disorders (e.g, mood disorders, schisophrenia) Supervisors: assist. prof. Jure Bon.	Not possible online.	Contact the responsible (contact person) and state your interests.	
Language processing in healthy and brain-damaged populations Christina Manouilidou, assoc. prof. Faculty of Arts, Department of Comparative and General Linguistics email: christina.manouilidou@ff.uni-lj.si web: https://sites.google.com/site/christinamanouilidou/	The general topic of the project falls in the areas of Psycholinguistics and Neurolinguistics. The research questions we will tackle are the following: what are the mechanisms of language processing? How do we recognize words? How do we process sentences? In what way is language processing compromised when the brain is affected? A special focus will be given on language degradation as a result of neurodegenerative diseases, such as various types of dementia, and on how language could be used as a diagnostic tool for dementia.		Introductory knowledge of linguistics, familiarity with linguistic terms, experience with experimental design and statistical analysis are a must. Familiarity with behavioral and/or electrophysiological and neuroimaging methodologies is desired. Contact the supervisor for specific topics.	Places: 1-2 | Level: S-I **The project is not available for WS 20/21.**
Factors of performance in cognitive tests for measuring executive functions Anja Podlesek, prof. / Luka Komidar, assist. prof. Department of Psychology, Faculty of Arts email: anja.podlesek@ff.uni-lj.si	The goal of the research is to study how performance in cognitive tests measuring executive functions (updating, inhibition, switching, planning) and psychometric characteristics of these tests are related to different variables such as personality (conscientiousness, neuroticism), prior experiences (practice, experience with similar tasks, playing videogames), task characteristics (single vs. dual tasks; time limited vs. time unlimited tasks) and other situational factors (e.g. test situation, instructions, feedback). Variables of interest can be freely chosen by the student.	If students have access to cognitive and other types of tests (e.g., they use tests from open access test batteries), remote collaboration is possible.	Experience with experimental designs, knowledge in psychometrics and multivariate statistical analysis.	Places: 1-2 | Level: S-I (possibly MA)

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Investigation of changes in cognitive test performance during cognitive training Anja Podlesek, prof. Department of Psychology, Faculty of Arts email: anja.podlesek@ff.uni-lj.si	E.g.: study of self-reported changes in strategies used, changes in eye movements or physiological measures.	If students have access to cognitive tests and plan to use self-report measures or specific behavioral measures which do not require the use of specific research equipment (e.g. eye-tracker), remote collaboration is possible.	Experience with experimental designs, knowledge in statistical analysis. In case of using eye-tracker or other physiological measures, prior experience is beneficial.	Places: 1-2 | Level: S-I (possibly MA)
Development of an interactive cognitive training for the elderly Anja Podlesek, prof. Department of Psychology, Faculty of Arts email: anja.podlesek@ff.uni-lj.si *in collaboration with* Andrej Košir, prof. LUCAMI lab, Faculty of Electrical Engineering, web: https://www.lucami.org/en/	We would like to develop a multicomponent training of executive functions that older people will be able to carry out at home with help of smart technology.	Theoretical work and development of the training design is possible in the remote format. For design implementation, work in the LUCAMI lab is required.		Places: 1-2 | Level: S-I (possibly MA)
Decision-Making Toma Strle, assist. prof. Faculty of Education, Center for Cognitive Science email: toma.strle@pef.uni-lj.si web: https://www.pef.uni-lj.si/1114.html	The student would explore one of the following aspects of decision-making: • Embodied, enactive and/or predictive processing accounts of decision-making. • Differences and similarities between decision-making in everyday life situations and the lab (alternatively, between hypothetical and real choice). • The role of self-understanding, metacognition, metacognitive feelings, etc. in decision-making.	Possible also in distance learning format.	Contact the supervisor, state your background and interest, and which subtopic you would be interested in. If motivated, other topics on decision-making may be agreed upon. In this case, students should send a brief — but specific — description of their project proposal.	Places: 1-2 | Level: S-I & MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
The experience of choice in everyday life Toma Strle, assist. prof. Faculty of Education, Center for Cognitive Science, Laboratory for Empirical Phenomenology email: toma.strle@pef.uni-lj.si web: https://www.pef.uni-lj.si/1114.html	The aim of the project is to investigate how people experience the process of decision-making and choice in everyday life.	Possible also in distance learning format (theoretical work).	Contact the supervisor and state your interests.	Places: 1-2 | Level: S-I & MA
A systematic review of first- person research on decision making Toma Strle, assist. prof. Faculty of Education, Center for Cognitive Science, Laboratory for Empirical Phenomenology email: toma.strle@pef.uni-lj.si web: https://www.pef.uni-lj.si/1114.html	The goal of the project would be to review first-person studies on decision-making stemming from the phenomenological tradition, classify them, and synthesise findings of the included studies. Optionally (dependent on the scope of the project), the student would compare/discuss findings of the systematic review with/in light of third-person research on decision-making, or decided-upon aspects of it.	Possible also in distance learning format.		Places: 1-2 | Level: S-I & MA
Looping minds: Exploring Possible Ways in Which Cognitive Science Might Exert Influence on Its Findings Toma Strle, assist. prof. Faculty of Education, Center for Cognitive Science email: toma.strle@pef.uni-lj.si web: https://www.pef.uni-lj.si/1114.html	Contemporary cognitive science is creating new ways of understanding of what it means to be a human mind/being. As such, it not only has the potential to change how people understand themselves but also affect what it finds out about its very subject matter – the human mind. The specific research question would be specified in more detail according to students' interest and background. Some examples of such looping effects: The interplay between mechanistic views of the human mind and exertion of self-control or other agency-related faculties; The interaction between explicit choice environment modification (e.g., nudges; algorithmic-supported choice), attitudes towards those modifications, and choice.	Possible also in distance learning format.	Contact the supervisor, state your interest and background, and how you would approach the topic.	Places: 1 | Level: S-I & MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Science, values and society Olga Markič, prof. Faculty of Arts, Department of Philosophy email: olga.markic@ff.uni-lj.si web: http://oddelki.ff.uni-lj.si/filo/english/staff/markica.htm	The aim of the project is to explore the interrelationship between science and values.	Possible on-line.	Contact the supervisor, state your interest and background, and how you would approach the topic.	Places: 1-2 | Level: S-I
Cognitive science in the world of sport Olga Markič, prof. Faculty of Arts, Department of Philosophy email: olga.markic@ff.uni-lj.si web: http://oddelki.ff.uni-lj.si/filo/english/staff/markica.htm	The aim of the project is to explore the relations between cognitive science and sport. Specific topics may include: Cognitive enhancement in sport and the question of doping; Embodied cognition and sport; Consciousness and sporting skills.	Possible on-line.	Contact the supervisor, state your interest and background, and how you would approach the topic.	Places: 1-2 | Level: S-I
Francisco Varela's work on life, mind, and consciousness Sebastjan Vörös, assist. prof. Faculty of Arts, Department of Philosophy email: sebastjan.voros@ff.uni-lj.si	The aim of the project is to explore Francisco Varela's work on life, mind, and consciousness.	Please contact project supervisor.	Contact the supervisor, state your interest and background.	Places: 1-2 | Level: S-I
Computational philosophy Borut Trpin, assist. prof. Faculty of Arts, Department of Philosophy & LMU München email: borut.trpin@gmail.com	We will address some recent topic in epistemology and/or philosophy of science by means of computer simulations. The goal is for the students to develop first-hand experience about computational methods in philosophy and at the same time investigate open philosophical questions.	Possible only in distance format.		Places: 2 | Level: S-I

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Project	Description	COVID-19 circumstances comments	Required Qualifications	Places | Level
Explainable Machine Learning **Explainable Machine Problem-Solving** Ivan Bratko, prof. Faculty of Computer and Information Science, Artificial Intelligence Lab email: bratko@fri.uni-lj.si web: https://fri.uni-lj.si/en/laboratory/lui	Explainable AI has recently become a very popular topic of AI research and applications. The reason is that some of the most powerful AI methods are very hard to be understood by humans. So they behave just like black boxes and their results hard to interpret. The most famous example of this are deep artificial neural networks. In these projects, ideas of turning these methods into "transparent boxes" with interpretable results will be explored.	Possible also in distance format.	Basics of AI.	Places: 3 | Level: S-I
Machine learning & natural language processing Marko Robnik Šikonja, prof. Faculty of Computer and Information Science, Laboratory for Cognitive Modeling email: marko.robniksikonja@fri.uni-lj.si web: https://www.fri.uni-lj.si/en/laboratory/lkm, https://www.fri.uni-lj.si/en/employees/marko-robnik-sikonja	Topics: - Machine learning: injection of knowledge into deep neural networks, cognitive limitations, explanation of prediction models etc. - Natural language processing: explanation of deep neural networks for text processing, design and implementation of language understanding evaluation tasks, word sense induction with deep neural networks, concept drift through time, political stance in corpora, text summarization, etc.	Possible also in distance format.	Contact the supervisor and state your interest.	Places: 1-2 | Level: S-I
Other projects Anka Slana Ozimič Various laboratories and departments email: anka.slanaozimic@ff.uni-lj.si	If you do not find a topic of your interest among the projects offered, please contact us about more possibilities. We are also connected with experts from the other fields of research (e.g., gait and cognition, psychedelics, music perception and cognition, cognitive modeling, natural language processing, user experience, virtual reality, etc.).		Contact the responsible (contact person) and state your interests.	Places: N/A | Level: S-I & MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Projects at the University of Vienna

Project	Description	COVID-19	Qualifications	Places	Level
Innovation, organization(-al cognition), design, and Enabling Spaces Univ. Prof. Dr. Markus Peschl Cognitive Science research Platform & Dept. of Philosophy website	Our guiding question concerns the topic of "how does novelty come into the world?". Projects are offered in the fields of innovation (theoretical as well as applied projects; on an individual/cognitive and/or on a collective/ organizational level), creativity, design, organizational design, as well as studying and developing how space enables and supports innovation- and knowledge work (e.g., in the sense of the extended/enacted cognition approach), and how such spaces can be designed. Projects range from (bit are not limited to) theoretical foundations (cognitive, epistemological, organizational, systems science, etc.), educational issues, such as acquiring innovation skills and mindsets, to the design of Enabling Spaces, such as office spaces or learning environments. Project work in small groups/teams is welcome.		Interest and some experience in innovation, design, architecture, openness, and creativity	2-3	IR II S-I MA
Making different tools from the same material in Goffin's cockatoos Alice Auersperg Messerli Research Institute, Comparative Cognition Unit/Goffin Lab website	Goffin's cockatoos have the capacity to make and use tools. In order o determine abilitiey to plan the function of a tool during manufacture, we will test if they can use the same material to make up to three tools for completely different purposes.		BA, experiments in handling animals, preferably experience in behavioural experiments	1	MA
Composite tool manufacture in Goffin's cockatoos Alice Auersperg Messerli Research Institute, Comparative Cognition Unit/Goffin Lab website	Composite tool use is an important aspect of human technical evolution. Goffin's cockatoos have the capacity to make and use tools and they are stacking objects during object play. Here we will test if they can purposely create a funtional tool by adding several separate components.		BA, experiments in handling animals, preferably experience in behavioural experiments	1	MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Art history and empirical methods

[Dr. Luise Reitstätter](#)

Department of Art History/Laboratory for Cognitive Research in Art History (CReA)

[web](#)

The aim of the Laboratory for Cognitive Research in Art History (CReA) is to expand art historical knowledge through the use of empirical and experimental methods. The laboratory's projects deal with traditional art historical questions about artworks and their perception as well as transdisciplinary issues of empirical aesthetics, visual culture and museology. Classical methods of art history are combined with digital humanities and social science approaches – from discourse analysis to database construction, from online questionnaires to open interviews and mapping. Research into eye movements, investigated during the beholding of art with remote and mobile eye trackers, is an area of special interest.

Current or upcoming projects:

Art User/Screen Viewer
Zoya Dare, PhD project
This research focuses on the aesthetic experience on the smartphone. Two studies will be conducted starting in October 2021, one on a remote eye tracker and another on a smartphone device.

Seeing history
Judith Herunter, MA thesis
An eye tracking study on the perception of narrative lines in painting, to be conducted with approx. 80 participants in autumn 2021.

Art Perception in a Museum Environment
Anna Miscenà, Carola Korhummel, Zoya Dare, PhD projects
The study will analyze different aspects of the aesthetic experience of art in a museum environment. Quantitative data will be collected with mobile eye-tracking devices (Tobii glasses) and qualitative data will be collected in the form of short interviews with museum visitors. Summer term 2022.

Right to the Museum?
Luise Reitstätter, Karolin Galter, Jubiläumsfonds-Projekt
Which museum concepts of the public can we trace in archival documents from founding statues to current mission statements? And, how are museums perceived by the local audience today? These two questions led our archival and field

Interest in empirical work in combination with arthistorical questions.

up to 4 |
IR II, S-I-PJ, MA

research in the last months. Starting in October 2021 we will delve into comparative data analysis.

Improvisation Dr. Lukas Zenk Donau-Universität Krems - Universität für Weiterbildung, Fakultät für Wirtschaft und Globalisierung, Department für Wissens- und Kommunikations-management web	The aim of this research project is to develop a framework for organizational improvisation. In this framework, factors for the complex and multidimensional ability of people to improvise in their organizational situation will be identified and described. Based on this basic scientific research, the framework will be used to develop prototypical designs for interventions in order to practically support the improvisational ability of people in organizations. (improvisation.science)	Virtual collaborations possible. Please contact Dr. Lukas Zenk	1-2	IR II S-I
Lexical and morphological acquisition Prof. Wolfgang Dressler Department of Linguistics, University of Vienna web	Acquisition of lexical or morphological elements from a point of view of cognitive science: typical or handicapped development	psycholinguistics	3	IR II S-I MA
Word-formation constructions / Cognitive linguistics and corpus linguistics Dr. Stela Manova ICLTT/Philosophy web	Usage-based research on the word-formation patterns in a language. The approach followed is a distributional one, i.e. the combinatorial properties of an element (a piece of word structure) in a corpus serve for that element's identification and definition. The goal is to better understand the nature of the pieces of structure that serve for construction of words.	Specialization in cognitive linguistics and corpus linguistics / Basic knowledge in linguistics	1	IR II S-I MA

Word-formation in the mental lexicon / Cognitive linguistics and psycholinguistics Dr. Stela Manova ICLTT/Philosophy web	This research is with a focus on the organization of the mental lexicon. By testing native-speaker intuitions, the idea is to establish what is listed in the lexicon and how words are constructed there.		Specialization in cognitive linguistics and psycholinguistics / Basic knowledge in linguistics	1	IR II S-I MA
Natural Language Processing (NLP) without grammar: algorithms and applications Dr. Stela Manova ICLTT/Philosophy web	Recent approaches to NLP do not involve grammar (linguistic information of any kind) but treat all words as units of the same type and model human language with the help of neural networks that, roughly speaking, control for frequency of use of words and their combinations (n-grams). In a similar fashion, this project seeks to establish the possible applications of NLP based on algorithms (with a focus on the Fibonacci sequence), n-grams and frequency.		Specialization in cognitive linguistics and psycholinguistics / Basic knowledge in linguistics	1 (+1)	MA (+ IR-II, S-I)
Individual differences in second/foreign language learning (including polyglotism, and language learning through non-formal methods). Susanne Maria Reiterer Unit of Language Learning and Teaching Research web	For students interested into second language acquisition in general, but especially the psycho-cognitive aspects of individual differences in language learning ability (language aptitude) and interfaces to other cognitive systems (musicality, personality, memory…) and language learning methods in non-formal circumstances (e.g. online, new media).	It should be possible according to the current rules and regulations (subject to the provisions) to meet on site in the lab/office/department with mask and caring for safety distances. Naturally a large proportion (>50%) of work can always be carried out from home / distance (home office principle). Online/virtual discussion meetings also possible.	Experience in or interest for testing human participants, knowledge about psychometrics, statistics (e.g. SPSS, Excel), qualitative/and or quantitative psycho-social research methods. Willingness to pursue secondary research on theoretical and practical aspects concerning the individual project.	1	IR II S-I (10 ECTS) MA(?)

Language Café and multilingual societies [Susanne Maria Reiterer](#) Unit of Language Learning and Teaching Research [web](#)	A second research focus concerns non-formal language learning strategies which are emerging nowadays in multilingual societies or areas, as e.g. the phenomenon of the "language cafe".	It should be possible according to the current rules and regulations (subject to the provisions) to meet on site in the lab with mask and caring for safety distances. Naturally a large proportion (>50%) of work can always be carried out from home / distance (home office principle). Availability of cafes is problematic in COVID times generally because of governmental restrictions in public places/gastronomy.	Experience in or interest for testing human participants, knowledge about psychometrics, statistics (e.g. SPSS, Excel), qualitative/and or quantitative psycho-social research methods. Willingness to pursue secondary research on theoretical and practical aspects concerning the individual project.	1	IR II S-I (10 ECTS) MA(?)
The (phon)aesthetics of second language learning – phonetic chill [Susanne Maria Reiterer](#) Unit of Language Learning and Teaching Research [web](#)	This new research project focuses on the aesthetic, psycho-acoustic, cognitive, social and emotional motivations of why individuals report to perceive certain foreign languages as more "attractive", "melodious" etc. and thus more rewarding/interesting to be learned. For students interested in foreign languages, especially sounds of languages.	It should be possible according to the current rules and regulations (subject to the provisions) to meet on site in the lab with mask and caring for safety distances. Naturally a large proportion (>50%) of work can always be carried out from home / distance (home office principle).	Experience in or interest for acoustic stimulus creation, human voice, voice recordings, testing human participants, knowledge about psychometrics, acoustic software (e.g. Praat, Adobe Audition). Willingness to pursue secondary research on theoretical and practical aspects concerning the individual project.	1	IR S-I (10 - 15 ECTS) MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Literary and Cultural Representations of Emotion Christa Knellwolf King Dept. for English and American Studies web	The research project investigates new methodologies for the interpretation of literary and cultural representations of emotion.		Interest in the interdisciplinary crossovers between literary studies and scientific approaches	1	IR II
Models of Personality and Emotions Paolo Petta Institute for Artificial Intelligence, Medical University of Vienna web	Project work, optionally also as complement to the related courses			3-4	S-I
Serious Games in Health Care Paolo Petta Intelligent Software Agents and New Media at OFAI (Austrian Research Institute for Artificial Intelligence) web	We are looking for students interested to conduct research in a range of disciplines in the domain of serious games in health care. Candidates will gain a broad overview of the state of the art in serious games research before focusing on a specific research topic. You will familiarise with the many perspectives and steps required in implementing a serious games project, from a first idea to a full concept that is scientifically sound, features interesting and conducive game mechanics, and is viable for practical deployment of impact.		Articulated interest (expression of motivation) in some sub-area of the application domain. Working knowledge of the cores of cognitive science paradigms and their implications in specific application settings. Availability for continuous active participation in group work and capability of carrying out assigned tasks (specifics to be developed individually).	3-4	S-I MA

[See description]	If you are interested in research on	Please make an appointment for more details	1-2	IR II S-I
Soheil Human Institute of Information Systems and New Media, Vienna University of Economics (WU Wien) web	**Accountability and controllability of computational cognitive models** **Cognitive Personal Assistant Systems** **Human needs** **Human values** **Societal consequences of cognitive modeling** **Predictive processing** **Framing of information system (nudging)** **Cognitive user interfaces** **Cognitive information economies** **Social imaginaries** **Human-computer interaction** **Intersection of European General Data Protection Regulation (GDPR) and Computational Cognitive Modeling** **Semantic Web Technologies, Knowledge Engineering and Ontology development** **Application of computational cognitive modeling from socioeconomic perspective** please make an appointment for more details.			

| **Incentivising Open Data Exploration through Needs Management** | Needs satisfaction plays a fundamental role in well-being of biological cognitive systems, including humans. Hence, Understanding citizens' needs is crucial for developing a successful social and economic policy. This notwithstanding, acquisition, representation, analysis, and visualisation of citizens' needs remain areas where support by dedicated computational tools is very limited. Also applications of needs data in the design of online services has not been thoroughly analyzed. | Internship position | 1 | IR II S-I |

Soheil Human

Institute of Information Business at the Vienna University of Economics and Business

web

Needs satisfaction plays a fundamental role in well-being of biological cognitive systems, including humans. Hence, Understanding citizens' needs is crucial for developing a successful social and economic policy. This notwithstanding, acquisition, representation, analysis, and visualisation of citizens' needs remain areas where support by dedicated computational tools is very limited. Also applications of needs data in the design of online services has not been thoroughly analyzed.

The goal of this project is to use existing needs profiles for organizing the catalogs of Open datasets and Open Data Apps, available at at the Open Government Portal of Vienna (https://open.wien.gv.at/site/open-data/) and at the independent Austrian Open Data Portal (https://opendataportal.at).

[BFUP] Beno, M., Figl, K., Umbrich, J., Polleres, A. (2017) Open Data Hopes and Fears: determining the barriers of Open Data. CeDEM 2017 https://aic.ai.wu.ac.at/~polleres/publications/Beno-etal-2017CeDEM.pdf
[HFKS] Human, S., Fahrenbach, F., Kragulj, F., Savenkov, V. (2017). Ontology for Representing Human Needs. Proc. of 12th Intl. Conference on Knowledge Engineering and Semantic Web, Szczecin, Poland. (to appear: see preprint at https://github.com/openeed/ond-family)
[OpeN] The OpeNeeD Ontology: https://github.com/openeed
[KaK] Kaiser, A., & Kragulj, F. (2016). Bewextra: Creating and Inferring Explicit Knowledge of Needs in Organizations. Journal of Futures Studies, 20(4): pp. 79-98.
[Dea1] Dean, H. (2014). Understanding human need. Bristol: Policy Press.

Internship position

You will develop a web catalog of open datasets and apps based on different principles of artefact grouping. Given an existing citizen's need profiles (encoded as the ontology [OpeN]), a correspondence between the needs on the one hand, and datasets and apps on the other hand will be established, and the digital artefacts (datasets & apps) will be grouped according to needs they are related to. A user-experience experiment will be conducted to compare the traditional interface (based on predefined categories) and the need-based one to assess if organising the data according to the identified needs has positive impact on user experience, and motivate users to invest time into exploring Open Data.

		Internship position	1	IR II S-I
Ontology Representation of Needs Profiles Soheil Human Institute of Information Business at the Vienna University of Economics and Business web	Needs satisfaction plays a fundamental role in human well being [TaD]. Hence understanding citizens' needs is crucial for developing a successful social and economic policy [Dea1, Dea2]. This notwithstanding, the concept of need has not yet found its place in systems and online tools for citizen participation. In fact, assessing needs itself remains a labor-intensive, mostly offline activity, where only a limited support by computational tools is available. While only a few methodologies for assessing and systematizing needs exist to date, including BEWEXTRA [KaK] developed in the WU Vienna, acquisition, representation and analysis of citizens' needs remain areas where support by dedicated computational tools is either limited or not existing. [Dea1] Dean, H. (2014). Understanding human need. Bristol: Policy Press. [Dea2] Dean, H. (2015). Social rights and human welfare. London: Routledge. [HFKS] Human, S., Fahrenbach, F., Kragulj, F., Savenkov, V. (2017). Ontology for Representing Human Needs. Proc. of 12th Intl. Conference on Knowledge Engineering and Semantic Web, Szczecin, Poland. (to appear: see preprint at https://github.com/openeed/ond-family) [OpeN] The OpeNeed Ontology: https://github.com/openeed [KaK] Kaiser, A., & Kragulj, F. (2016). Bewextra: Creating and Inferring Explicit Knowledge of Needs in Organizations. Journal of Futures Studies, 20(4): pp. 79-98. [TaD] Tay, L., & Dieer, E. (2011). Needs and subjective well-being around the world. Journal of personality and social psychology, 101(2): 354.	In this project you will contribute to the creation of such tools by continuing the digitalization of a needs study, conducted with the citizens of the Vienna quarter Stuwerviertel following the BEWEXTRA methodology [HFKS]. You will help presenting the results of the study with an increased granularity using the OpeNeed ontology [OpeN], and then use SPARQL query language to provide examples of semantic queries against the resulting needs data. The project paper will report on your experiences and ideas for the improvement of OpeNeed, and analyze ways of improving computer support for needs assessment.		

Rethinking Homeorhesis in Biomedical Contexts [Isabella Sarto-Jackson](#) KLI [web](#)	Biomedical sciences and psychopharmacology draw primarily from the medical model of disease that provides a conceptual framework for the disease-centered model of drug action. This model presupposes that mental disorders are based on a derailment of brain homeostasis. Increasingly more scientists have begun to critically question the disease-centered model of drug action. The shortcomings of the model derive from assumptions of monocausality and effect linearity largely based on a mechanistic view. Yet, explanations using homeostasis neglect ontogenetic trajectories and system-level responses of the organism. This project focuses on the reinstatement of the concept of homeorhesis to supplement explanations of homeostasis. Including homeorhesis as an explanatory process within the medical model aims at facilitating a conceptual shift from a disease-centered to a drug-centered view. To this end, the project aims at gathering converging evidence of psychotropic drug effects to support the idea of homeorhesis in biomedical contexts.		Interest in philosophy and neurobiology	1	IR II S-I MA
Organizational learning and Knowledge based Management [ao. Univ. Prof. Dr. Alexander Kaiser](#) Research Group Knowledge based Management, Vienna University of Economics and Business [web](#)	We do research in the field of knowledge based management and organizational learning. More precisely, we offer projects upon negotiation in the field of vision development, need-based innovation, organizational (un)learning and systemic coaching.		Motivation to work in an interdisciplinary team; some experience with qualitative research methods preferable; If field work is involved, German skills are necessary	1	IR II S-I

Organizational learning and Knowledge based Management ao. Univ. Prof. Dr. Alexander Kaiser Research Group Knowledge based Management, Vienna University of Economics and Business web	The proposed IR2-topic deals with the operationalization of three previously identified types of knowledge in the context of need-based organizational learning. It is intended for students seeking to explore the intersections of cognitive science and business/organizational related fields in a practical yet interdisciplinary way. Detailed project description here.		Interest in interdisciplinary research and organizational learning.	1	IR II S-I
Reflection about intercultural experiences – intercultural competence development Ingrid Pleschberger, BA BA MSc Head of International Office FH BFI Wien web	Reflection is a widely acknowledged aspect of intercultural competence development. Accordingly, reflection activities such as learning journals or diaries are frequently used as measures to assess and/or facilitate intercultural competence development. However, there is currently no agreement on a uniform definition or a research-based model of reflection that explicitly incorporates intercultural competence (ICC) nor a model of ICC that incorporates reflection. This research aims at providing (1) a definition and concept of RIE, and (2) an operationalised instrument (interview guideline and coding scheme) to assess RIE	Possible tasks: Quantitative and qualitative data analysis of already existing data. Mai – June 2021 data collection (interviews and transcriptions will be paid) via jisti or if possible in person Theoretical work is also possible potential candidates can do the project fully online or a mixture online/on-site.	German and English language skills on a level that allows them to conduct and transcribe interviews And/or Experience with quantitative and qualitative data analysis	3	IR II S-I (10 - 20 ECTS) MA(?)

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Experimental induction of social and non-social motivational states [Giorgia Silani](), [Ana Stijovic]() Department of Applied Psychology: Health, Development, Enhancement and Intervention	In this project, we investigate the effects of a period (8h) spent without social contact or without food on: stress levels (measured using physiological and subjective measures), affective states, motivation to engage with food-related and social content, and basic cognitive abilities. A short-term response to a homeostatic imbalance includes increased autonomic arousal and increased motivation to seek rewards that can relieve the aversive state and reestablish balance. In addition to basic survival systems, such as regulation of nutritional balance or defense from threat, it has been recently suggested that our need for affiliative social contact is regulated by a similar homeostatic system. Although we cannot directly test this idea, we aim to make a first step towards understanding effects of a short-term social isolation on the state of our body, self-reported affective states and motivated behavior, as opposed to a short-term reaction to fasting.	High flexibility, reliability, good time management, ability to work in a team, German and English proficiency	2 + 2	Intern ships (15h / week) + MA (start in Jan./ Feb. 2020)
New hypotheses for research on autism and music, Part 1: Large-scale replication of potential biomarkers in rs-fMRI [Giorgia Silani, Christian Gold]() Department of Applied Psychology: Health, Development, Enhancement and Intervention	**Background:** Autism is a "social disorder", and music is a "social art". Music therapy may help people with autism to develop social engagement, but mechanisms are not clear. Brain areas including the superior temporal sulcus (STS), right temporo-parietal junction (rTPJ), and right supramarginal gyrus (rSMG; relevant for empathy and theory of mind), and functional connectivity between auditory, motor, and sensory regions (relevant for sensorimotor integration) have been suggested to be of relevance. However, these findings were based on relatively small samples. **Methods:** This project will aim to determine structural and functional differences or similarities between people with/without autism in relevant brain areas, using MRI and resting-state fMRI data from a large, publicly available dataset (ABIDE-I and ABIDE-II, combined n>2000). **Relevance:** Given the "replicability crisis" in psychology, the findings from this project will provide a solid basis for future intervention studies of music therapy and related interventions. **Note:** Other projects related to music and autism using different methodology may become available; further information on request.	Desirable: experience with analysing fMRI data; programming skills in MATLAB (or R)	1-2	MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

New hypotheses for research on autism and music, Part 1: Large-scale replication of potential biomarkers in rs-fMRI Giorgia Silani, Christian Gold Department of Applied Psychology: Health, Development, Enhancement and Intervention	**Background:** Many people with autism have a high interest or special skills in music; some can benefit from music-based interventions. However, little is currently known about the ways and the extent people with autism engage in music activities in daily life. **Methods:** Based on previously constructed scales and a currently ongoing survey in other countries, a survey of music engagement will be conducted in an Austrian clinical sample (from clinical institutions in St. Pölten or Vienna, n=50-100) and a matched non-clinical sample. **Relevance:** Better knowledge of music use in daily life, including functional uses of music, will be important to inform the development of future interventions for this population.	Survey methods experience	1	MA
New hypotheses for research on autism and music, Part 1: Large-scale replication of potential biomarkers in rs-fMRI Giorgia Silani, Christian Gold Department of Applied Psychology: Health, Development, Enhancement and Intervention	**Background:** A large multinational randomised controlled trial of music therapy for children with autism spectrum disorder did not find clinical effects; this was in contrast to many smaller trials. One reason may be the heterogeneity of the population, in connection with the focus on a distal downstream outcome. **Methods:** Re-analysis of an existing dataset (n=364) with a focus on individual symptoms that may be linked to specific mechanisms of joint music-making. Path models or structural equation models will be used to determine which of these symptoms at baseline are able to predict clinical benefits. **Relevance:** Better understanding of who on the autism spectrum may be most likely to benefit from music therapy.	Structural equation modelling (SEM) experience	1	MA

Brain-Computer Interfaces Moritz Grosse-Wentrup Research Group Neuroinformatics, Faculty of Computer Science, University of Vienna web	Brain-Computer Interfacing (BCI) enables the control of external devices such as wheelchairs or robotic arms for severely paralyzed patients by mind control. Multiple projects of to advance the state-of-the-art in BCI are available within the research group Neuroinformatics, ranging from cognitive strategies for patient training over feedback design to neural decoding algorithms.	Students should have an interest in working in interdisciplinary research teams, be open to working with actual patients, and have basic programming skills.		IR II S-I MA
Conceptualizing exposure therapy as a dynamic feedback system Prof. Frank Scharnowski Cindy Lor MScDepartment for Basic Psychological Research and Research Methods web	We aim at better understanding and optimizing exposure therapy. Specifically, we investigate psychological, peripheral physiological and neuroimaging measures to computationally model exposure therapy as closed-loop feedback systems.	Motivation to conduct interdisciplinary experimental research; good organization and time management; creativity; basic programming skills (e.g. MATLAB, Python, R, ...) are an advantage	5	IR II, S-I or MA
Real-time fMRI Neurofeedback Prof. Frank Scharnowski Andrew Nicholson, PhD Department for Basic Psychological Research and Research Methods web	We will conduct multiple studies investigating the ability to regulate emotional states using real-time fMRI neurofeedback in both healthy individuals and psychiatric patient populations. This method consists of using brain computer interfaces that provide feedback of neural states using brain imaging.	Independent learners, highly motivated, long-term career aspirations in neuroscience.	5	IR II, S-I or MA

Levels: IIRI: 10 ECTS (Semester 2)   S-I: 10/15/20 ECTS (Semester 3)   MA: 25 ECTS Master's Thesis (Semester 4)

Machine-learning with psychological data [Prof. Frank Scharnowski](#) [David Steyrl, PhD](#) Department for Basic Psychological Research and Research Methods	Generally, machine-learning techniques are powerful tools for data analysis. Particularly in psychology, where heterogeneous, multimodal data are ubiquitous. We offer the chance to dive into this hot topic and to gain hands-on experience with real world machine-learning applications.		basic programming skills (e.g. MATLAB, Python); enjoying programming	2	S-I or MA
How personality and sex influence problem solving in a highly social fish [Dr. Sabine Tebbich](#) [Dr. Stefan Fischer](#) Department of Behavioural Biology [Konrad Lorenz Insitut of Ethology](#)	We are looking for a motivated student interested in a Master's project in Behavioural Biology and Cognition using a social cichlid (Neolamprologus pulcher) from Lake Tanganyika. The thesis will be part of the WWTF funded project: "Coping with change: Investigating the relationships between behavioural flexibility, stress and early environment". Problem solving is a major challenge for animals especially under rapidly changing environments. How much individuals are able to cope with changing conditions will be determined by their personality and life history. In this project you will investigate the understudied link between individual characteristics and problem solving abilities using targeted behavioural experiments. The work will be based at the Konrad Lorenz Institute for Ethology which is located on Wilhelminenberg in the 16th district.		We are particularly interested in a student with a keen interest in scientific questions, that would like to research fish behaviour and cognition, is able to work independently and in a team. Our daily communications are in English and the student is required to have good knowledge of English and, preferably, the thesis should be written in English.	2	MA

Levels: IIRI: 10 ECTS (Semester 2) S-I: 10/15/20 ECTS (Semester 3) MA: 25 ECTS Master's Thesis (Semester 4)

Sliders for decision making Laura Koesten, Torsten Möller Computer Science, Research Group for VDA web	Siders on interfaces provide a range to select an input value. Sliders can restrict users to entering valid values by only offering a valid range, or they can be used to support multi-criteria decision making. In this project we aim to compare different types of sliders for decision making. This includes triangular, binary and single, sliders as well as "scented widgets", which are embedded visualizations to facilitate navigation in information spaces. (See for instance https://dl.acm.org/doi/pdf/10.1145/3240167.3240185) Tasks: • Creating interfaces using different slider types, develop simple alternatives of slider components • Design an online user study (including task design, recruitment, usability evaluation) • Analyse quantitative and qualitative data from the user study	Remote collaboration possible	Knowledge in HCI (Human Computer Interaction) and FDA (Foundations of Data Analysis) Programming languages: Python or R	1 IR II S-I
Understanding climate change data Laura Koesten Computer Science, Research Group for VDA web	Data visualisations, such as charts, are often used to communicate data about climate change, both in research and in popular news sources. This project investigates how people make sense of common data visualizations about climate change by conducting interview studies with doctoral researchers and students at the University of Vienna. Tasks: • Collect sample types of charts commonly used with respect to climate change (e.g. on social media) • Design and conduct an interview study • Qualitative data analysis	Remote collaboration possible	FDA (Foundations of Data Analysis) VIS (Data Visualization)	1 IR II S-I

| Understanding COVID-19 data

Laura Koesten

Computer Science, Research Group for VDA

web | Data visualisations, such as charts, are used frequently to communicate data about COVID-19, both in research and in popular news sources. In this project we investigate the types of questions that are frequently asked during the COVID-19 pandemic and how charts are used to answer them. We will do this by collecting commonly asked questions and conducting a qualitative study about how people answer these questions for themselves using COVID data visualisations.
Tasks:
• Collect a sample dataset of COVID related questions (from online resources)
• Design a study aiming to investigate people's sense-making practices | Remote collaboration possible | FDA (Foundations of Data Analysis)

Possibly VIS (Data Visualization) | 1

IR II
S-I |
| Data documentation
Laura Koesten

Computer Science, Research Group for VDA

web | Documenting data is as important as publishing it. There are many proposals that describe the content and format of data documentation, capturing the entire data science lifecycle, from collecting the data (for instance using sensors) to cleaning and analysing it. The aim of this project is twofold:
1. To apply these documentation proposals on known and less known datasets to understand how easy to use they are and how subjective documentation practices are.
2. To explore collaborative documentation practices to reduce inconsistencies in documentation. To do this we will investigate the differences when people use traditional metadata schemata versus a more creative setting, such as using Jamboard, to describe a dataset.
Tasks:
• Design, conduct and analyse a qualitative study | Remote collaboration possible | FDA (Foundations of Data Analysis)

Basic knowledge of qualitative research methods | 1

IR II
S-I |

Data descriptions Laura Koesten (+Kathleen Gregory) Computer Science, Research Group for VDA web	Metadata, or standardized descriptions of data, are powerful surrogates for data. They impact how data are discovered, how data are understood, and how data are used. Metadata are most often created manually at data repositories, although there is great variation in how this is done. This project will use a large-scale survey (e.g. an online questionnaire) to understand the metadata generation processes at data repositories included in the re3data.org database. Tasks: • Create sample of data repositories to include • Create questionnaire • Recruit respondents • Analysis of questionnaire responses	Remote collaboration possible	FDA (Foundations of Data Analysis) Programming languages: Python or R	1 IR II S-I
Common data or spreadsheet fears Laura Koesten Computer Science, Research Group for VDA web	We are increasingly exposed to data in different aspects of our lives, be that in an ever growing range of professions reliant on data analysis, or in our private lives exposing us to data about us, our activities or using data to inform our decisions. However, many people still do not feel comfortable engaging with a spreadsheet, nor do they have the skills to perform more complex types of data analysis. In this project we aim to conduct a qualitative study to better understand people's preconceptions by observing them interacting with a spreadsheet and discussing their experiences. *Tasks:* • Design a mixed method study • Recruit respondents • Qualitative data analysis	Remote collaboration possible	FDA (Foundations of Data Analysis) Possibly VIS (Data Visualization) Possibly HCI (Human Computer Interaction)	1 IR II S-I

Understanding data conversations to understand data science communities Laura Koesten (+Kathleen Gregory) Computer Science, Research Group for VDA web	The project will build a corpus of conversations around datasets and data science activities from forums of data communities such as Kaggle, data.world, or Reddit. The aim is to carry out content and community analysis, using qualitative or quantitative methods to understand how people talk about data and to learn what that means for data community platform design. Tasks: • Collecting available forum messages of two data platforms (e.g. Kaggle) • Getting familiar with the data set • Content and community analysis of the messages and their authors	Remote collaboration possible	FDA (Foundations of Data Analysis) VIS (Data Visualization) Basic qualitative and quantitative data analysis Programming languages: Python or R	1 IR II S-I MA
How do people understand charts? Laura Koesten Computer Science, Research Group for VDA web	Textual descriptions of charts are relevant for a variety of application and research areas. In this project we will create a crowdsourcing study to collect a dataset of charts annotated with a description of their key messages as perceived by the readers of the charts. The data will consist of images (charts) and free text interpretations of the charts. We will analyse the resulting descriptions qualitatively and visualise the results in an interactive manner. *Tasks:* • *Qualitative (content analysis) and quantitative analysis of text and image data* • *Apply basic NLP techniques to cluster and analyse free text data* • *Design a simple user interface to explore the data corpus interactively and present results*	Remote collaboration possible	FDA (Foundations of Data Analysis) VIS (Data Visualization) Programming languages: Python or R, Javascript, HTML	1 S-I MA

Maternal vocal communication in the nest in kea parrots Wein-Schwing, Amelia, Univ.-Ass. Mag PhD Comparative Cognition, Messerli Research Institute web	In a recent study we discovered that kea parrot mothers produce a nest-specific call type, but the function of this call type is not yet known. In this study the student will go through video and audio recordings of kea mothers in the nest to attempt to explain the function of this call type. Please be aware that this project will not involve directly working with the birds.	Remote collaboration possible	Interest and/or pre-experience in animal vocal communication, basic knowledge of bioacoustics, basic stats skills. Must co-register with the VetMed Uni.	1 S-I MA