



Courses and research in cognitive science in Bratislava

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Comenius University in Bratislava

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A few facts from CogSci history in Bratislava

- 1st Slovak monography related to cognitive science: Beňušková Ľ. et al.: *Quest for a Common Language in Cognitive Sciences* (in Slovak), Kalligram, 2000.
- 1st Slovak textbook Rybár J. et al. (eds.): *Kognitívne vedy* (Cognitive Sciences), Kalligram Bratislava 2002.
- Rybár et al. (eds.): *Jazyk a kognícia* (Language and Cognition), Kalligram Bratislava 2005.
- Kvasnička V. et al (eds). *Myseľ, inteligencia a život* (Mind, intelligence and life). STU in Bratislava, 2007.
- Kvasnička V. et al (eds). *Modely mysle* (Models of the mind). Európa Bratislava, 2008
- *Annual Czech-Slovak conference Cognition and Artificial Life* (since 2001)
- CogSci programme at Comenius University is running (in English since 2016)
- *Successful re-accreditation in 2015 (for 6 years)*

Centre for Cognitive Science

People at the faculty (FMPI)

- Farkaš Igor – AI and cogsci
- Takáč Martin – AI and cogsci
- Beňušková Ľubica – neuroscience
- Rybár Ján – psychology
- Kamhal Dezider – philosophy
- Zlatoš Pavol – logic
- Cimrová Barbora – cogsci, EEG
- PhD students: Peter Gergel', Tomáš Kuzma, Matúš Tuna, ...

Other faculties of Comenius University

- Cséfalvay Zsolt, prof., aphasia, dementia
Faculty of Education
- Ostatníková Daniela, prof., hormones & cognition, Faculty of Medicine
- Višňovský Emil, prof., Faculty of Philosophy

Slovak Academy of Sciences (SAS), Bratislava

- Čavojová Vladimíra, Inst. of Exper. Psychology, decision making, emotions
- Riečanský Igor, Inst. of Normal and Pathological Physiology, cog. neuroscience
- Marko Martin, Inst. of Normal and Pathological Physiology, semantic nets
- Rosipal Roman, Inst. of Measurement Science, machine learning, cognitive neuroscience, BCI

Other universities

- Sýkora Peter, prof., UCM Trnava, bioethics
- Gáliková Silvia, prof., Trnava, consciousness
- Gál Tomáš, PhD., altered states of mind

cogsci.fmph.uniba.sk

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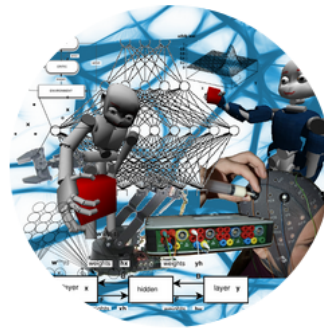
Centre for Cognitive Science

MEi:CogSci
Bratislava



Master programme

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Community

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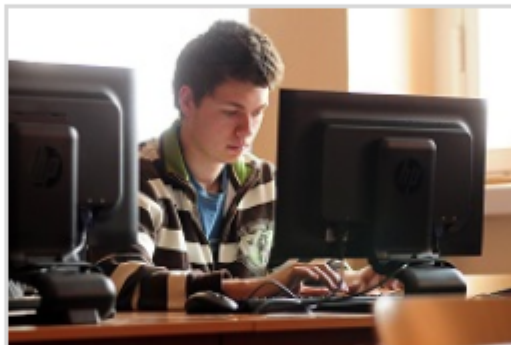
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EDUCATION

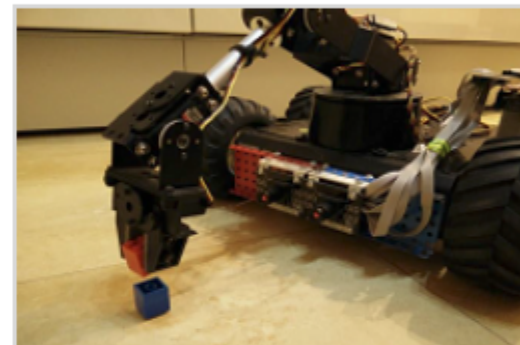
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New Trends in Cognitive Science

- Formed by two courses: (each worth 5 ECTS)
- Igor Farkaš ~ grounded cognition
- Martin Takáč ~ cognitive semantics

We are looking forward to you!



Additional courses in English

- Introduction to Mathematics (Kohanová)
- Introduction to Programming (in Python) (Kuzma)
- Introduction to Computational Intelligence (Farkaš)
- Current Theories of Consciousness (Gáliková)
- Philosophy of AI (Višňovský)
- And other courses...
- See the curriculum at

http://dai.fmph.uniba.sk/w/Master_program_in_Cognitive_Science/en

Our research in AI and CogSci

Cognition and Neural Computation group

MEi:CogSci



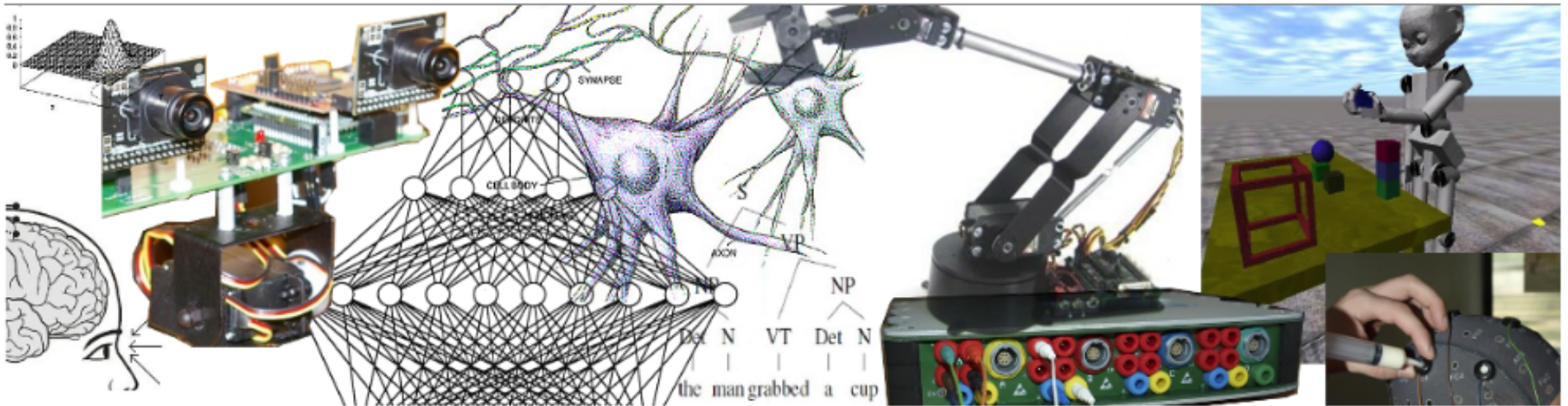
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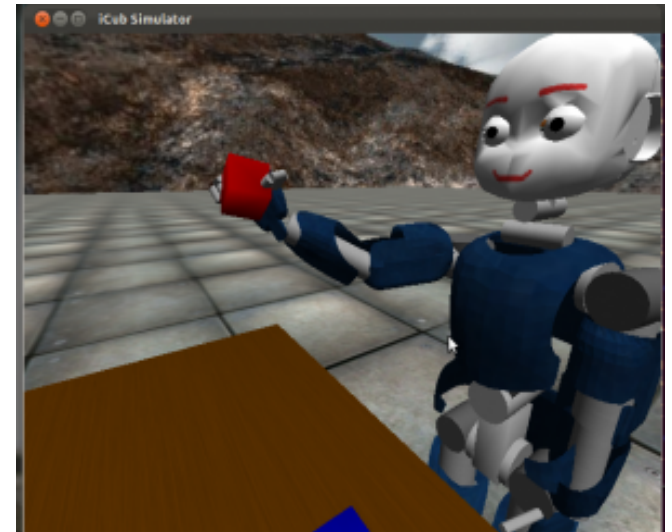


Research:

- computational modeling – of cognitive modeling (with neural networks), cognitive robotics, deep networks, analysis of neural network models
- experimental research – BCI

iCub simulator

- developed within EU project RobotCub
- publicly available since 2007
- licensed under GPL, it has been designed to reproduce, as accurately as possible, the physics and the dynamics of the robot and its environment
- uses Open Dynamics Engine (ODE) for simulating rigid bodies and the collision detection algorithms to compute the physical interaction with objects
- Useful for robotic experiments



Our EEG measurement system

g.USBamp – USB Biosignal Amplifier



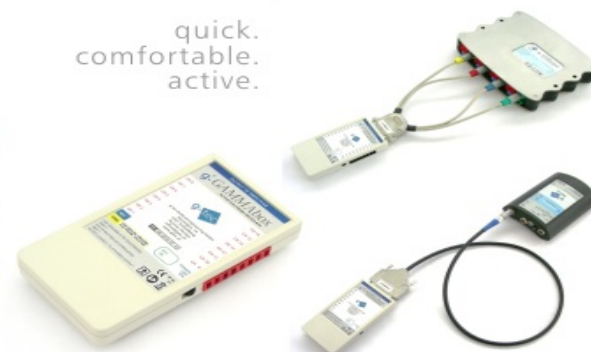
- multi-modal amplifier system
EEG, ECG, EMG, EOG, ...
respiration
other sensors
- simultaneous sample and hold
for all channels
- 16 analog inputs with 24 Bit, 38.4 kHz
per channel
- can be stacked for 32, 48, 64 channels
- fully DC coupled
- USB 2.0 interface
- FDA and CE approved



g. GAMMAsys
ACTIVE ELECTRODE SYSTEM



quick.
comfortable.
active.



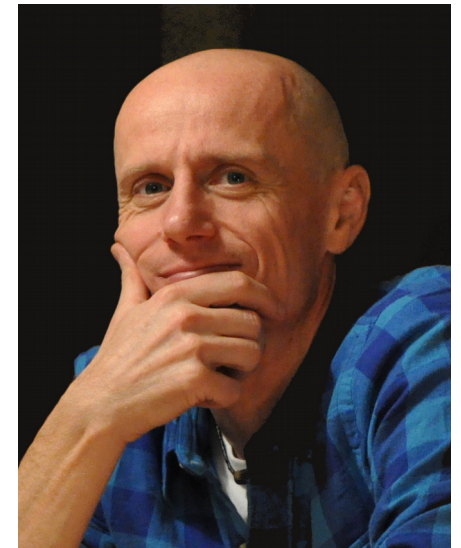
(donation of Humboldt foundation)

Computational and cognitive neuroscience

- Institute of Measurement Science,
Slovak Academy of Sciences
- Roman Rosipal, PhD

Research topics:

- computational and cognitive neuroscience
- electrophysiological data analysis
(EEG, EOG, EMG, ECG); event-related
potentials; sleep process modelling;
- study of cognitive fatigue; brain-computer
interfaces; vigilance, drowsiness and
fatigue monitoring



Cognitive Neuroscience

- Institute of Normal and Pathological Physiology
Slovak Academy of Sciences, Bratislava
- MUDr. Igor Riečanský, PhD.

Research topics:

- brain mechanisms of mental processes
- cognitive neuroscience and neuropsychiatry

- Martin Marko, PhD.

Research topics:

- connectivity and thought, semantic networks
- transcranial direct current stimulation

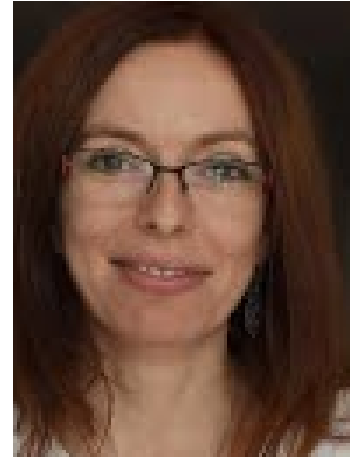


Experimental psychology

- Institute of Experimental Psychology,
Slovak Academy of Sciences

Dr. Vladimíra Čavojová

- Dr. Lenka Kostovičová



Research topics:

- rationality
- decision making, risk perception
- emotions



Philosophy and AI

- Faculty of Philosophy,
Comenius Uni in Bratislava (CUB)
- Prof. Emil Višňovský



Research interests:

- social and moral norms,
- philosophy of action,
- philosophy of artificial intelligence

Philosophy of mind

- Institute of Philosophy
Slovak Academy of Sciences
- Prof. Silvia Gáliková



Research topics:

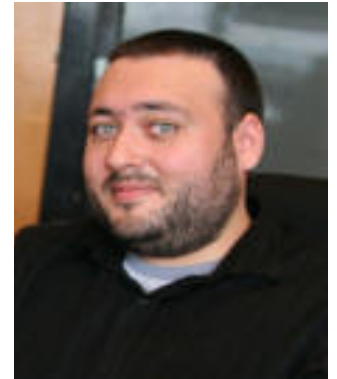
- philosophy of science
- philosophy of mind
- consciousness

Education / Religion

- Section Information Technologies,
Mlyny, Comenius University
- Tomáš Gál, PhD

Research topics:

- special education,
- religiosity and cognition,
- altered states of mind



Thank you for your attention



Bratislava can't wait to hear from you!