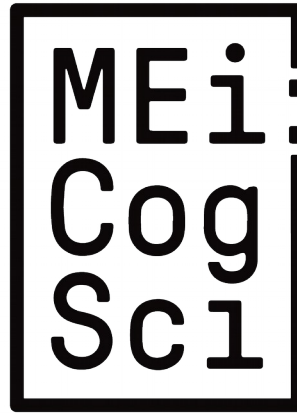




Bratislava



Middle European
interdisciplinary
master's programme in
Cognitive Science



Courses and research in cognitive science in Bratislava

Centre for Cognitive Science

Faculty of Mathematics, Physics and Informatics
Comenius University in Bratislava

December 4th, 2020



A few facts from CogSci history in Bratislava

- 1st Slovak monography on cognitive science: Beňušková Ľ. et al.: *Quest for a Common Language in Cognitive Sciences* (in Slovak), Kalligram, 2000.
- 1st Slovak textbook - Rybár J., Beňušková Ľ., Kvasnička V. (eds.): *Kognitívne vedy* (Cognitive Sciences), Kalligram Bratislava 2002.
- Rybár J., Kvasnička V., Farkaš I. (eds.): *Jazyk a kognícia* (Language and Cognition), Kalligram Bratislava 2005.
- Kvasnička V., Trebatický P., Pospichal J., Kelemen J. (eds). *Myseľ, inteligencia a život* (Mind, intelligence and life). STU in Bratislava, 2007.
- Kvasnička V., Kelemen J., Pospichal J. (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 – since 2007, in English since 2016
- This year (2020): the 4th international cohort !
- Slovak cogsci history also on [wiki \(kognitívna veda\)](#)

Centre for Cognitive Science

People at the faculty (FMPI)

- Farkaš Igor – AI and cogsci
- Takáč Martin – AI and cogsci
- Malinovská Kristína – AI & cog. robotics
- Cimrová Barbora – cogsci, EEG
- Beňušková Ľubica – comp. neuroscience
- Gál Tomáš – ethics, AI, ...
- Slavíčková Mária – math for cogsci
- PhD students: M. Tuna, J. Holas, M. Pecháč, M. Tomko, E. Hamerlik, ...

Other faculties of Comenius University

- Ostatníková Daniela, prof., Faculty of Medicine, hormones, cognition & autism
- Višňovský Emil, prof., Faculty of Philosophy, philosophy of action, of AI
- Cséfalvay Zsolt, prof., Faculty of Education, communication disorder

Slovak Academy of Sciences (SAS), Bratislava

- Čavojová Vladimíra, Šrol Jakub – Inst. of Exper. Psychology, decision making, rationality, biases
- Riečanský Igor, Marko Martin – Inst. of Normal and Pathological Physiology, cog. neuroscience
- Rosipal Roman, Inst. of Measurement Science, EEG/BCI, cognitive neuroscience

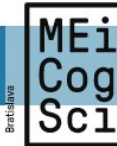
Other universities

- Sýkora Peter, prof., UCM Trnava, bioethics
- Tomašková Silvia, prof., Nitra, philosophy of mind, consciousness
- Špajdel Marián, doc., Trnava, cog. neurosci.

cogsci.fmph.uniba.sk

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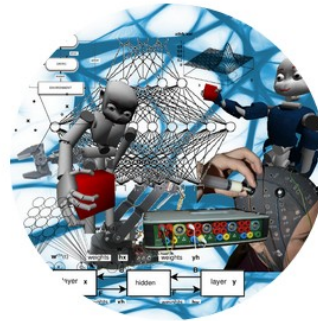


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Master programme

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Research

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[CNC](#) Research Group
Cognitive Science [Seminar](#)
[Technical Reports](#) in Cognitive Science



Community

[SSKV](#): Slovak Society for Cognitive Science
MEi:CogSci Bratislava on [Facebook](#)
Students and alumni group on [Facebook](#)
Cognitive Science [Blog](#)
MEi:CogSci [Alumni](#)

Igor



Martin



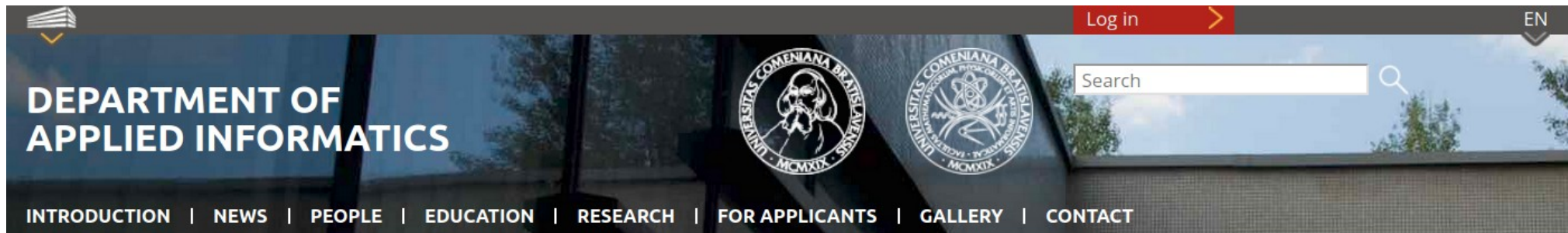
Kristína



Barbora



The base of MEi:CogSci programme



**COGNITION AND
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MAY 29-31 2019



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WORDS**
SEPTEMBRA 22, 2018



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EDUCATION

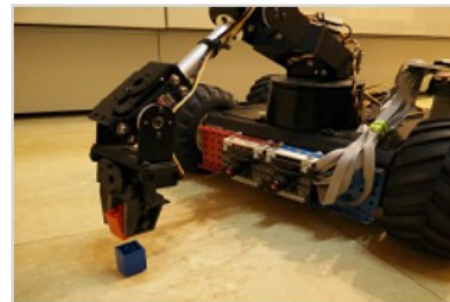
[Bachelor program in
Applied Informatics](#)

[Master program in
Applied Informatics](#)

[Master program in
Cognitive Science](#)

[Academic support center](#)

[Theses](#)



RESEARCH

[Computer Graphics and Vision](#)

[Artificial Intelligence and
Computational Modelling](#)

[Theory of Programming](#)

[Projects](#)

[Conferences and Events](#)

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IT SPY 2020
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www.itspy.cz Spoluzorganizujú praxovú fakultu a Slovenskú univerzitu

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Hlasujte za prácu Mateja Kráľika z našej fakulty v súťaži IT SPY:
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Hlasovanie nájdete na tejto stránke, Matej je druhý zdola v časti finalistov:
<https://www.itspy.cz/sk/galerie-nejlepsich/>

Courses in Bratislava

- New Trends in Cognitive Science (obligatory)
 - Grounded cognition (I. Farkaš, K. Malinovská)
 - Cognitive semantics (M. Takáč)
- Elective courses
 - Mathematics for Cognitive Science (M. Slavíčková)
 - Introduction to Programming (in Python) (K. Malinovská)
 - Introduction to Computational Intelligence (I. Farkaš)
 - Philosophy of AI (E. Višňovský)
 - ...
- See the [curriculum](#)

Our research in AI and CogSci

Cognition and Neural Computation group

MEi:CogSci



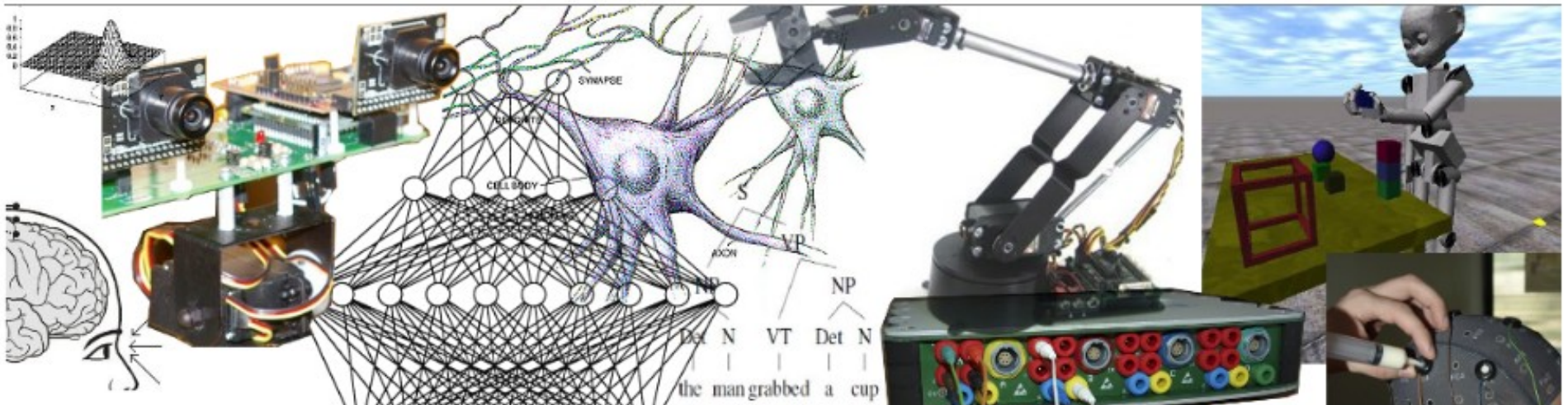
Home

People

Research

Publications

CNC Seminar

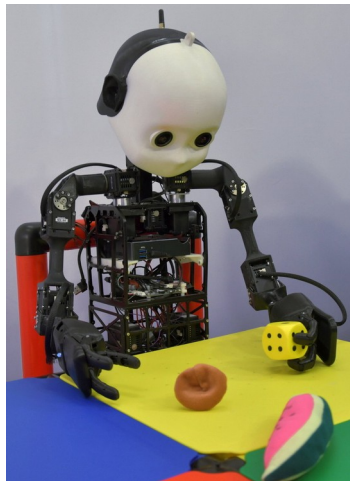
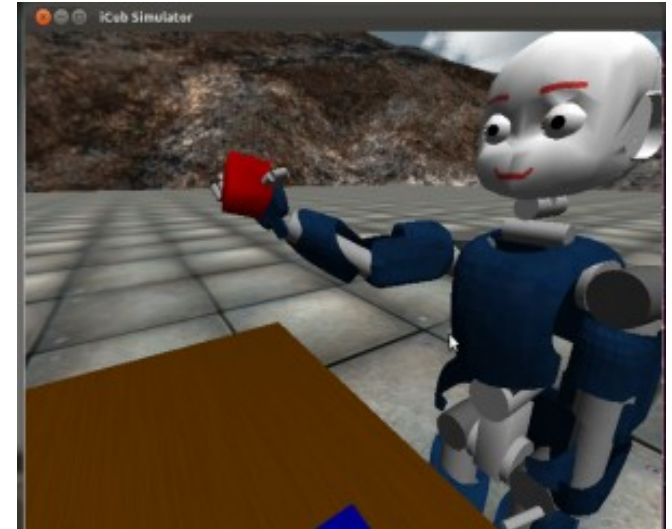


Research:

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

Computational modeling (in robotics)

- robotic simulators: e.g. iCub, Coppelia Robotics, Open AI gym
- Machine learning is based on artificial neural networks – for vision, motor learning, memory, language
- New robots: Jupiter & Nico

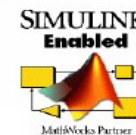


Opportunities for experimental research

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



- New additions:
 - head-mounted eye-tracker
 - mixed reality glasses



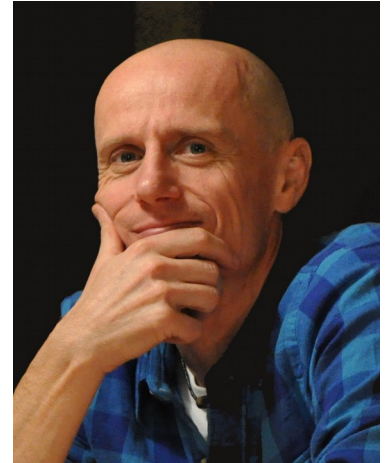
Sources: Humboldt
foundation + grant of
L. Beňušková

Computational and cognitive neuroscience

Slovak Academy of Sciences

Institute of Measurement Science

Roman Rosipal, PhD



- applied machine learning
- EEG/ERP → BCI
- sleep, neural correlates of working memory, vigilance, drowsiness and fatigue monitoring

Behavioral & cognitive neuroscience

Slovak Academy of Sciences, Bratislava

Centre of Experimental Medicine

MUDr. Igor Riečanský, PhD.

- brain mechanisms of mental processes
- cognitive neuroscience, biological psychology, psychiatry



Mgr. Martin Marko, PhD.

- memory and semantic networks
- transcranial direct/alternating current stimulation (tDCS, tACS)



Experimental psychology

Slovak Academy of Sciences, Bratislava

Centre of Social and Psychological Sciences

Dr. Vladimíra Kurincová Čavojová

Dr. Jakub Šrol



- rationality, cognitive biases
- epistemically suspect beliefs
- reasoning, risk perception
- climate change beliefs



Philosophy (of anything :-)

Comenius University in Bratislava

Faculty of Philosophy

Prof. Emil Višňovský



- humanism, technology, modern society
- philosophy of action, of AI, of virtual reality

Philosophy of mind

Constantine the Philosopher University, Nitra

Department of Philosophy

Prof. Silvia Tomašková



- philosophy of mind, mind/body problem
- problem of consciousness, the self
- metaphor and metaphorical language of the "inner"
- mind in cognitive science

How to get to your project

- 1) Ideally, you choose a project you like offered at the host uni and agree on a LC with your supervisor.
- 2) If you have an idea about the project, but it is not offered, try to find a competent supervisor who may be willing to work with you.
- 3) If you have an idea about your preferred supervisor (given his/her expertise), contact him/her – you may converge to a project that you both will agree on.
- 4) If none of the above is the case, it may be difficult. Try to reconsider your view :-)

Good luck with your choice! We are looking forward to you!