DEPARTMENT OF CYBERNETICS AND ARTIFICIAL INTELLIGENCE

kkui.fei.tuke.sk
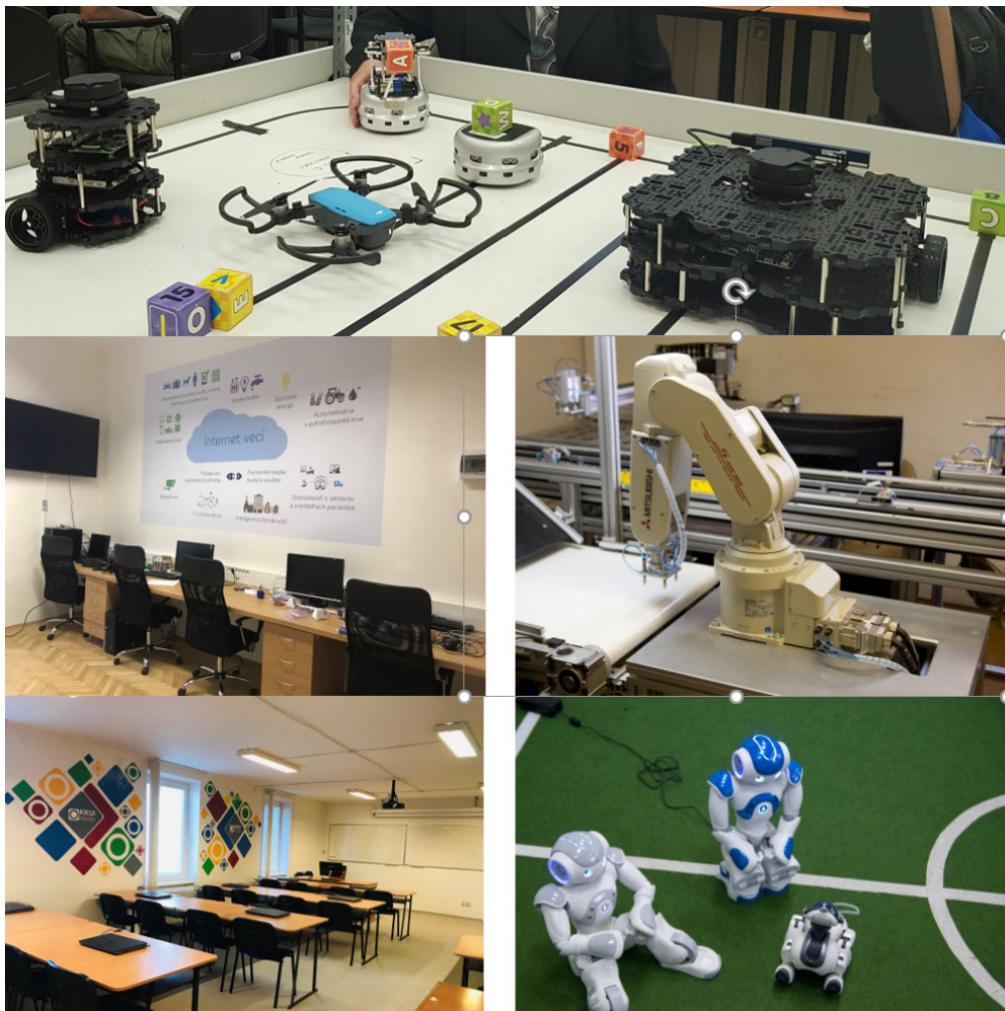**Tel./Fax: ++421 55 6022575**

Head of Department
prof. Ing. Peter Sinčák, CSc.
E-mail: peter.sincak@tuke.sk

1   DEPARTMENT'S PROFILE

The Department of Cybernetics and Artificial Intelligence (DCAI) is responsible for educationin two study programs: Intelligent Systems, and Business Information Systems at all three levels of university education (bachelor, master and PhD).

The main research topics at the DCAI are intelligent and cognitive robotics with the aim to develop learnable collaborative robot systems, interactive intelligent environment able to perceive and recognise activities and events, cloud computation, data science, knowledge management, semantic technologies, intelligent decision support systems, mobile technologies, pervasive computing, processing and analysis of the large volume and continuous data in real-time, Internet of things, Industry 4.0, modern control theory and fault tolerant control design, cyber-physical systems, under-actuated and actuated nonlinear dynamical systems, flexible manufacturing systems, collective intelligence and computer vision.

The predecessor of the Department was founded in 1964. Department of Cybernetics and Artificial Intelligence was adapted in 1989. Currently it has 25 staff members and 19 internal PhD. students. There are 3 research centers within the department: Center of Intelligent Technology (http://www.cloudai.sk/), Center of Applied Cybernetics (http://kkui.fei.tuke.sk/info/cak) and Center of Business Information Systems (http://kkui.fei.tuke.sk/chi/). The Department is involved in a number of research and educational projects (see below).

2 STAFF

Professors:
prof. Ing. Dušan Krokavec, CSc.
prof. RNDr. Eva Ocelíková, CSc.
prof. Ing. Ján Paralič, PhD.
prof. Ing. Tomáš Sabol, CSc.
prof. Ing. Ján Sarnovský, CSc.
prof. Ing. Peter Sinčák, CSc.
prof. Ing. Iveta Zolotová, CSc.

Associate Professors:
doc. Ing. František Babič, PhD.
doc. Ing. Marek Bundzel, PhD.
doc. Ing. Peter Butka, PhD.
doc. Ing. Anna Filasová, CSc.
doc. Ing. Anna Jadlovská, PhD.
doc. Ing. Ján Jadlovský, CSc.
doc. Ing. Marián Mach, CSc.
doc. Ing. Kristína Machová, CSc.
doc. Dr. Ing. Ján Vaščák

Assistant Professors:
Ing. Peter Bednár, PhD.
Ing. Anna Biceková, PhD.
Ing. Vladimír Gašpar, PhD.
Ing. Slávka Jadlovská, PhD.
Ing. Gergely Magyar, PhD.
Ing. Peter Papcun, PhD.
Ing. Martin Sarnovský, PhD.

Technical Staff:
Tatiana Baňasová
Adriána Kandrová

Ph.D. Students (internal):
1st.
Ing. Dominika Čupková
Ing. Lukáš Hruška
Ing. Viera Maslej Krešňáková

2nd.	Ing. Juliana Ivančáková
	Ing. Miroslav Jaščur
	Ing. Lukáš Koska
	Ing. Ján Magyar
	Ing. Ľudmila Pusztová
	Ing. Jaroslav Socháň
	Ing. Pavol Šatala
3rd.	Ing. Norbert Ferenčík
	Ing. Erik Kajáti
	Ing. Zuzana Pella
	Ing. Patrik Sabol
4th.	Ing. Martin Čertický
	Ing. Jozef Mocnej
	Ing. Miroslav Smatana
	Ing. Michal Vadovský
	Ing. Dominik Vošček

3   RESEARCH TEAMS

- **Data science** – primarily focused on methods and models for analysis of different types of data and models and methods for the processing and analysis of large volumesof data and continuous flows of data in real-time. (https://hi.kkui.fei.tuke.sk/)
- **Fault-tolerant and Robust Control** – primarily focused on innovative control design techniques exploiting convex optimization problems with constraints and disturbance suppression, models and algorithms for processing and synthesis of robust control of dynamical systems working under system model uncertainties and severe failure conditions and design, implementation and experimental verification of methods guarantying system fault tolerance and reconfiguration structures of control.
- **Modern Control Techniques and Industrial Informatics** – primarily focused on methods and developing resources for hybrid modeling and control of cyber-physical systems, new methods and algorithms for modeling, identification, control and diagnostics of under-actuated and actuated nonlinear dynamical systems, research and development of flexible manufacturing systems, automated and robotic production lines and the design of diagnostic systems focused on diagnostics of vibration and chatter for the cyber systems. (http://kyb.fei.tuke.sk/laben/)
- **Intelligent Cybernetic Systems** – primarily focused on machine learning algorithms, collective intelligence, and optimization, and computer vision, intelligent and cognitive robotics, smart living, intelligent space topics, sensors nets, intelligent gateways and processing with IoT/IoE and cloud technologies in smart industry, and multi-robotics systems and navigation. (http://ics.fei.tuke.sk/)
- **Intelligent Technologies and Systems** – primarily focused on intelligent robotics (to develop learnable collaborative robot systems), interactive intelligent environment able to perceive and recognise activities or events, and cloud computation (AI bricks – modular services providing functionality of selected artificial intelligence methods). (http://www.cloudai.sk/)

4 TEACHING

4.1 Undergraduate Study (Bc.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Basics of Intelligent Systems	2nd	2/2	Sinčák
Introduction to Business Informatics	2nd	1/2	Paralič
Industry 4.0.	2nd	2/2	Zolotová Papcun
Basics of Automatic Control	3rd	2/2	Jadlovská A., Jadlovský
Computational Artificial Intelligence	3rd	2/2	Vaščák
Open Informatics for Intelligent Systems	3rd	2/2	Papcun
Simulation Systems	3rd	2/2	Jadlovská A., Jadlovská S.
Project Management	3rd	2/2	Babič
Microcontrollers	3rd	2/2	Jadlovský
Information Systems Analysis and Design	4th	1/2	Babič, Sarnovský M.
Simulation systems in Business Information Systems	4th	1/2	Butka
Knowledge-Based Systems	4th	2/2	Machová
Intelligent Systems and Internet of Things	4th	2/2	Vaščák
Fuzzy Systems	4th	2/2	Vaščák
Control and Visualization Systems	$4^{th},5^{th}$	2/2	Zolotová
Intelligent Decision Making Systems	$4^{rd},5^{th}$	2/2	Mach
Control System Components	$3^{rd},4^{rd}$	2/2	Jadlovský
Web Technologies	$4^{th},6^{th}$	2/2	Bednár
Control of Technological Processes	4th	2/2	Jadlovský
Scheduling and Logistics	4th	2/2	Paralič Butka
Optimal Control of Hybrid Systems	5th	2/2	Jadlovská A.
Intelligent Robotics	5th	2/2	Bundzel
Business Analytics	5th	2/2	Butka
Neural Networks	5th	2/2	Sinčák
Models and control of industrial processes (MRPP)	5th	2/2	Filasová, Jadlovská S.
Computer Systems in Control	5th	2/2	Jadlovský
Optimisation in Economic Processes	5th	2/2	Filasová
Business Informatics in practice	6th	2/2	Babič
Service Robotics	6th	2/2	Mach
IT Management	5th	2/2	Sarnovský M.
Selected topics in cybernetics II	6th	2/2	Sarnovský J.

4.2 Graduate Study (Ing.)

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Discret Control of Dynamic Systems	1st	2/2	Filasová
Computer Vision	1st	2/2	Bundzel
Humanoid Technologies	$1^{st},3^{rd}$	2/2	Magyar
Computer Systems in Control	1st	2/2	Jadlovský
Architectures of Industrial Information Systems	1st	2/2	Zolotová, Papcun

Subject	Semester	Lectures/exercises (hours per week)	Name of lecturer
Engineering Econometrics	2nd	2/2	Krokavec
Knowledge Discovery	1st	2/2	Paralič
Machine Learning	1st	2/2	Machová
Heuristic Optimization Processes	1st	2/2	Mach
Control and Artificial Intelligence	2nd	2/2	Jadlovská
Technologies for Big Data Processing	2nd	2/2	Bednár, Sarnovský M.
Evolutionary Algorithms	2nd	2/2	Mach
Distributed Control Systems	2nd	2/2	Jadlovský
Decision making and complexity	2nd	2/2	Gašpar
Hybrid Computational Intelligence	2nd	2/2	Vaščák
Team project	2nd	0/3	Zolotová
Knowledge Management	3rd	2/2	Paralič
Design and testing of software systems	3rd	1/2	Gašpar
Management Information Systems	3rd	2/2	Jadlovský
Diagnostics and Robust Control	3rd	2/2	Filasová
Advanced methods of computer vision	3rd	2/2	Bundzel
Cognitive Robotics	3rd	2/2	Bundzel
Semantic and Social Web	3rd	2/2	Machová
Languages for Intelligent Systems	3rd	2/2	Mach
Applications of Cloud Technologies	3rd	2/2	Magyar
New Trends in Business Information Systems	4th	2/2	Paralič

5   <u>RESEARCH AND EDUCATIONAL PROJECTS</u>

- ***Big Data Era in Sky and Earth Observation),*** COST Action TD1403, European Cooperation in Science and Technology, duration: 2014 – 2018, members from our department: Peter Butka (Management Committee member for Slovakia)

- ***European Network for cost containment and improved quality of health care***, COST Action CA15222, European Cooperation in Science and Technology, duration: 2016 – 2020, members from our department: František Babič (Management Committee member for Slovakia)

- ***Indoor living space improvement: Smart Habitat for the Elderly***, COST Action CA16226, European Cooperation in Science and Technology, duration: 2017 – 2021, members from our department: František Babič (Management Committee member for Slovakia)

- ***European Network for the Joint Evaluation of Connected Health Technologies***, COST Action TD1405, European Cooperation in Science and Technology, duration: 2014 – 2018, members from our department: František Babič (Management Committee member for Slovakia)

- ***ALICE Experiment at the LHC at CERN – study of strongly interacting matter under extreme conditions,*** international project of basic research, duration: 2016 – 2020, members from our department: Ján Jadlovský (Team Leader for TUKE), Slávka Jadlovská (Deputy Team Leader), Anna Jadlovská, Matej Oravec, Ján Čabala, Dominik Vošček, Lukáš Koska, Jaroslav Socháň

(http://alice-cern.fei.tuke.sk/)

- ***Cloud Based Human Robot Interaction,*** Slovak Research and Development Agency project No. APVV-15-0731, duration: 2016 – 2020, *project leader:* Peter Sinčák

- ***Knowledge-based approaches for intelligent analysis of big data***, Slovak Research and Development Agency project No. APVV-16-0213, duration: 2017 – 2020, in cooperation with Slovak University of Technology in Bratislava, Faculty of Informatics and information Technologies. Members from our department: Ján Paralič (project leader), Peter Bednár, Peter Butka, Kristína Machová, František Babič, Martin Sarnovský, Vladimír Gašpar, Miroslava Muchová, Michal Vadovský, Miroslav Smatana, Zuzana Pella, Pavol Šatala, Ľudmila Pusztová, Juliana Ivančáková

- ***Artificial Intelligence for Cloud based Intelligent Robotics,*** Scientific Grant Agency project No. 1/0773/16, 2016-2019, project leader: Peter Sinčák

- ***Control reconfiguration with active fault diagnosis,*** Scientific Grant Agency project No. 1/0608/17, duration: 2017 – 2020, members: Dušan Krokavec (project leader), Filasová Anna

- ***Methods and models for analysis of data streams***, Scientific Grant Agency project No. 1/0493/16, duration: 2016 – 2019, members: Ján Paralič (project leader), Martin Sarnovský, Peter Bednár, František Babič, Peter Butka, Kristína Machová, Vladimír Gašpar, Anna Biceková, Michal Vadovský, Miroslav Smatana, Miroslava Muchová, Martin Mikula, Zuzana Pella, Katarína Oravcová, Pavol Šatala, Ľudmila Pusztová, Juliana Ivančáková, Viera Maslej Krešňáková

- ***Intelligent Cyber-Physical Systems in Heterogenous Environment with IoE and Cloud Services Support,*** Scientific Grant Agency project No. 1/0663/17, 2017-2020, members: Iveta Zolotová (project leader), Marek Bundzel, Peter Papcun, Ján Sarnovský, Erik Kajáti, Norbert Ferenčík, Jozef Mocnej, Ján Vaščák, Martin Miškuf, Dominika Čupková

- ***Introduction of practical education of mobile technologies through the development of applications for smart devices.*** Cultural and Education Grant Agency Project No. 005TUKE-4/2017, duration 2017 – 2019, members: František Babič (project leader), Vladimír Gašpar, Martin Sarnovský, Michal Vadovský, Miroslav Smatana

- **Smart Industry/Architectures od intelligent information and cybernetic systems**, Cultural and Education Grant Agency Project No. 033TUKE-4/2018, duration 2018-2020, members: Iveta Zolotová (project leader), Peter Papcun, Erik Kajáti, Ján Vaščák, Dominika Čupková, Norbert Ferenčík, Marek Bundzel, Miroslav Jaščur, Martin Miškuf, Jozef Mocnej

- **Implementation of research results in the area of modeling and simulation of cyber-physical systems into the teaching process** - development of modern university texboooks, Cultural and Education Grant Agency Project No. 072TUKE-4/2018, duration 2018 - 2020, members: Slávka Jadlovská (project leader), Anna Jadlovská, Matej Oravec, Ján Čabala, Dominik Vošček

- ***University Science Park TECHNICOM for Innovation Applications Supported by Knowledge Technology***, ITMS: 26220220182, supported by

the Research & Development Operational Programme funded by the ERDF. Three pilot projects are performed at our department:

- o PP4: IT tools and services for analysis of various types of processes, Ján Paralič -pilot project leader, members: František Babič, Martin Sarnovský, Peter Bednár, Peter Butka, Vladimír Gašpar, Miroslava Muchová, Martin Mikula, Michal Vadovský

- o PP5 – Cloud and dynamic services for distributed. intelligent and mobile networks: lead by Frantisek Jakab from DCI, from DCAI have been participating: Iveta Zolotová, Peter Michalik, Tomáš Lojka, Martin Miškuf, Erik Kajáti, Jozef Mocnej

- o PP6: Use of artificial intelligence in intelligent systems, Peter Sinčák-pilot project leader

- o PP7: Center for Nondestructive Diagnostics of Technological Processes Using Standard Software for Control and Communication, Ján Jadlovský- pilot project leader, members: Ján Sarnovský, Anna Jadlovská, Iveta Zolotová, Slávka Jadlovská, Peter Papcun, Jakub Čerkala, Michal Kopčík, Matej Oravec, Ján Čabala

- **IT Academy – educationfor the 21st century**, ITMS: 312011F057, duration: 2017-2021. Innovation of the university subjects for preparation of students for employment in the IT sectorin the areas of:

  - o Intelligent cyber-physical systems and IoE, members: Iveta Zolotová, Marek Bundzel, Ján Vaščák, Peter Papcun

  - o Data science, members: Ján Paralič, Peter Butka, František Babič, Peter Bednár, Martin Sarnovský

- **IoTNET – Take your kowledge to the edge**, 2018, Tatrabanka foundation, Martin Miškuf (project leader), members: Erik Kajáti, Peter Papcun, Tomáš Lojka, Jozef Mocnej, Iveta Zolotová

- **MILEAGE – Machine Learning Generation**, 2017-2018, Tatrabanka foundation, Erik Kajáti (project leader), members: Martin Miškuf, Jozef Mocnej, Iveta Zolotová, Peter Papcun, Dominika Čupková

6   CO-OPERATION

6.1   Co-operation in Slovakia

- Department of Automatic Control Systems Bratislava, Slovak University of Technology, Bratislava
- Institute of Intelligent Systems, Faculty of Informatics, Slovak University of Technology, Bratislava
- Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava
- Institute of Computer Science, Slovak Academy of Sciences in Bratislava
- Department of Biophysics IEP Slovak Academy of Science
- Institute of Computer Science, University of P.J. Šafárik, Košice
- Institute of Experimental Physics, Slovak Academy of Sciences
- Department of applied informatics (Centre for Cognitive Science), Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Department of Control and Information Systems, Faculty of Electrical

Engineering, University of Zilina
- Accenture Košice
- Americká obchodná komora na Slovensku
- bart.sk Košice
- Betamont Slovakia
- Control Systems Slovakia
- Elcom Prešov
- Erste Group IT International GmbH Bratislava
- Exponea Bratislava
- Fpt Slovakia: FPT Group
- Freundenberg IT
- GlobalLogic Slovakia
- Gymbeam Košice
- IBM Slovakia
- IT Valley Košice
- Microsoft Slovakia
- Ness Košice Development Center
- Pixel Federation
- Promiseo Košice
- US Steel Košice
- ui42 Bratislava
- VSE Holding, člen Innogy
- Východoslovenská distribučná, člen Innogy

6.2   International Co-operation

- Department of Software Engineering and Interactive Systems, Vienna University of Technology, Austria
- Dept. for Technical & Operational Information Systems (Data & Knowledge Engineering Group), Otto-von-Guericke-University Magdeburg, Germany
- University of Regensburg, Germany
- University of Dortmund, Germany
- Waseda University, Tokyo, Japan
- Technical University of Czestochowa
- Tokyo Institute of Technology, Japan
- Kuyshu Institute of Technology, Japan
- University Pablo de Olavide of Seville, Spain
- Université Joseph Fourier Grenoble, IUT 1 (Institut Universitaire de Technologie 1), Grenoble, France
- Heudiasyc UMR CNRS 6599, UTC, Compiegne, France
- Université Henri Poincaré, Laboratoire CRAN (Centre de Recherche en Automatique de Nancy), Nancy 1, France
- Department of Informatics, Technical University Ostrava, Czech Republic
- Department of Control Systems and Instrumentation, Faculty of Mechanical Engineering Technical University Ostrava, Czech Republic
- Department of Cybernetics and Biomedical Engineering, Technical University Ostrava, Czech Republic
- Department of Cybernetics, Czech Technical University Prague, Czech Republic
- Department of Control Engineering, Czech Technical University, Prague, Czech Republic

- Institute of Information Theory and Automation, Academy of Sciences of Czech Republic, Prague, Czech Republic
- Department of Information Engineering, Faculty of Economics and Management, Czech University of Agriculture, Prague, Czech Republic
- Faculty of Informatics and Management, University of Hradec Králové, Czech Republic
- Dept. of Computer Science and Engineering, Faculty of Applied Sciences, University of West Bohemia, Plzeň
- The Technical Faculty of IT and Design, Aalborg University, Denmark
- Faculty of Mechanical Engineering, Department of Automation, Institute of Information, University of Miskolc, Hungary
- Óbuda University, Budapest, Hungary
- Budapest University of Technology and Economics, Hungary
- Hungarian Academy of Sciences, Computer and Automation Research Institute, Hungary
- Regional Association of the Hungarian Academy of Sciences, Miskolc, Hungary
- Laboratory for Industry 4.0 Smart Manufacturing Systems (LI4.0) , University of Auckland, New Zealand

6.3 Membership in International Organizations and Societies

- Bundzel M.: IEEE, Computational Intelligence Society
- Krokavec, D.: Member of the International Federation of Automatic Control IFAC Technical Committee TC 1.4 Stochastic Systems and TC 6.4 Fault Detection, Supervision & Safety of Technical Processes
- IEEE Student Branch – Lojka, Miškuf, Hvizdoš, Mocnej, Ferenčík, Kajáti
- Ocelíková, E.: CSSSCzech and Slovak Society for Simulation
- Machová, K.: ACM – Association of Computer Machinery
- Papcun P.: IEEE, Automation and Robotic Society
- Paralič, J.: ACM – Association for Computing Machinery, IEEE
- Sabol, T.: Information Society Technologies Program Committee (IST PC), 5th Framework Program, Brussels
- Sarnovský, J.: INESInternational Network of Engineers and Scientists for Global Responsibility
- Sarnovský, J.: Principia Cybernetica Web PRNCYB-L
- Sarnovský, J.: SWIISSuplementary Ways for Improving International Stability
- Sinčák P.: European Society of Neural Networks
- Sinčák P.: IEEE, Computational Intelligence Society
- Vaščák, J.: IEEE – senior member, Computational Intelligence Society
- Zolotová, I.: IEEE – senior member, IEEE SMC Society, IEEE Educational Society

6.4 Membership in Slovak Organizations and Societies

- The whole Department of Cybernetics and Artificial Intelligence is a team member of:
    - Slovak Society for Cybernetics and Informatics
    - Slovak AI Society
- Filasová, A.: Slovak Society for Cybernetics and Informatics
- Krokavec, D.: Slovak Electrical Engineering Society
- Jadlovská, A; Ocelíková, E.; Sarnovský, J.: Slovak Society for Cybernetics

and Informatics
- Paralič, J.: Slovak Society for Computer Science
- Sabol, T.: Board of the Open Society Fund, Bratislava

6.5 International Networks and Exchange Programs

- Erasmus+ programme Inter-institutional agreement 2014-2021 between TU of Košice and TECHNOLOGIKO EKPAIDEFTIKO IDRYMA-PIREA, T.E.I. Pirea, Greece, contact person: Iveta Zolotová
- Erasmus+ programme agreement between TU of Košice and University of Auckland, New Zealand, contact person: Iveta Zolotová
- SocratesErasmus agreement between TU of Košice and Czech University of Life Sciences, Prague, Czech Republic. Contact person: Eva Ocelíková
- Socrates Erasmus agreement between TU of Košice and University Pablo de Olavide, Sevilla, Spain. Contact person: Ján Vaščák
- SocratesErasmus agreement between TU of Košice and University Hradec Kralove, Czech Republic. Contact person: Ján Vaščák

6.6 Visitors to the Department

- Cindy Bethel, Mississippi State University, USA
- Daniel Carruth, Mississippi State University, USA
- Pitoyou Hartono, Chukyo Univeristy Japan
- Kaoru Hirota, Beijing Univeristy of Technology, Biejing, China (emeritus prof. from Japan)
- Andreas Holzinger, Graz University of Technology, Austria
- Christopher Hudson, Mississippi State University, USA
- Laszlo Kovacs, University of Miskolc, Hungary
- Szilvester Kovacs, University of Miskolc, Hungary
- Yuan Fu Liao, National Taipei University of Technology, Taiwan
- Ch. Liu – University of Auckland, New Zealand
- Takashi Minato, Japan Advance Telecomunication Institute of Technology International, Japan
- Petri Pulli, Finland University of Oulu, Finland
- Napoleon Reyes, Massey University New Zealand
- Takahiro Yamanoi, Hokkai-Gakuen University, Sapporo Japan
- R.Y. Zong – University of Auckland, New Zealand

6.7 Visits of Staff Members to Foreign Institutions

- N. Ferenčík, Berkeley, USA, 1. 1. - 2. 4.
- M. Miškuf, Auckland, Nový Zéland, 15. 1. - 17. 2.
- E. Kajáti, Auckland, Nový Zéland, 15. 1. - 15. 4.
- P. Papcun, Auckland Nový Zéland, 4. - 18. 2.
- F. Babič, Alicante, Španielsko, 20. - 23. 2.
- K. Machová, Krems an der Donau, Rakúsko, 29. 1. - 2. 2.
- F. Babič, Gothenburg, Švédsko, 23. - 26. 4.
- M. Vadovský, Gothenburg, Švédsko, 23. - 26. 4.
- P. Butka, Novi Sad, Srbsko, 25. - 28. 2.
- L. Koska, Ženeva, Švajčiarsko, 26. - 12. 3.
- J. Socháň, Ženeva, Švajčiarsko, 26. - 12. 3.
- D. Vošček, Ženeva, Švajčiarsko, 26. - 12. 3.

- D. Krokavec, Solún, Grécko, 10. - 14. 4.
- P. Papcun, Atlanta, USA, 29. 4. - 4. 5.
- J. Magyar, Nara, Japonsko, 17. 5. - 14. 8.
- F. Babič Kaunas Litva 30. 5. - 2. 6.
- P. Šatala, Sevilla, Španielsko, 5. - 10. 6.
- F. Babič, Praha, ČR, 4. - 8. 6.
- Ľ. Pusztová, Praha, ČR, 4. - 8. 6.
- P. Sinčák, Praha, ČR, 21. - 23. 5.
- P. Sabol, Paríž, Francúzsko, 22. - 25. 5.
- Fouzia Adjailia, Paríž, Francúzsko, 22. - 25. 5.
- P. Butka, Helsinky, Fínsko, 22. - 25. 5.
- D. Krokavec, Praha, ČR, 19. - 20. 5.
- J. Mocnej, Ostrava, ČR, 22. - 25. 5.
- D. Krokavec, Szilvavárad, Maďarsko, 28. - 31. 5.
- D. Krokavec, Ponita Delgada Portugalsko 2. - 8. 6.
- A. Filasová, Ponita Delgada Portugalsko 2. - 8. 6.
- D. Krokavec, Limasol, Cyprus, 12. - 16. 6.
- A. Filasová, Limasol, Cyprus, 12. - 16. 6.
- M. Jaščur Paríž Francúzsko 31. 5. - 1. 6.
- Fouzia Adjailia Paríž Francúzsko 31. 5. - 1. 6.
- P. Papcun Ostrava, ČR, 3. 7. - 3. 7.
- I. Zolotová, Ostrava, ČR, 3. 7. - 3. 7.
- E. Kajáti Ostrava, ČR, 3. 7. - 3. 7.
- P. Butka Skopje Macedónsko 12. 7. - 15. 7.
- J. Paralič Hamburg Nemecko 29. 8. - 1. 9.
- F. Babič Wroclaw Poľsko 12. 9. - 18. 9.
- J. Jadlovský, Ženeva, Švajčiarsko, 31. 7. - 3. 8.
- J. Socháň, Ženeva, Švajčiarsko, 31. 7. - 9. 8.
- F. Babič, Riga, Lotyšsko, 9. 10. - 10. 10.
- F. Babič, Londýn, Veľká Británia, 10. - 13. 10.
- S. Jadlovská, Ženeva, Švajčiarsko, 21. 7. - 30. 8.
- D. Vošček, Ženeva, Švajčiarsko, 21. 7. - 30. 8.
- L. Koska, Ženeva, Švajčiarsko, 21. 7. - 30. 8.
- J. Paralič Praha, ČR, 5. - 7.9.
- M. Sarnovský Praha, ČR, 5. - 7.9.
- P. Šatala Praha, ČR, 5. - 7.9.
- M. Bundzel Oslo Nórsko 2. 9. - 5. 9.
- G. Magyar, Oslo, Nórsko, 2. 9. - 5. 9.
- M. Bundzel, Praha, ČR, 5. - 7.9.
- G. Magyar, Praha, ČR, 5. - 7.9.
- J. Jadlovský, Praha, ČR, 5. - 7.9.
- A. Jadlovská, Praha, ČR, 5. - 7.9.
- S. Jadlovská Praha, ČR, 5. - 7.9.
- I. Zolotová, Praha, ČR, 5. - 7.9.
- P. Papcun, Praha, ČR, 5. - 7.9.
- E. Kajáti, Praha, ČR, 5. - 7.9.
- D. Krokavec, Warsaw, Poľsko, 28. 8. - 1. 9.
- F. Babič, Gothenburg, Švédsko, 16. - 19. 10.
- P. Sabol, Praha, ČR, 5. - 7.9.
- P. Butka, Wroclaw Poľsko 12. - 14. 9.

- P. Butka, Berlín Nemecko 16. - 20. 9.
- J. Paralič, Brno, ČR, 10. - 12. 10.
- P. Butka, Brno, ČR, 10. - 12. 10.
- P. Bednár, Brno, ČR, 10. - 12. 10.
- M. Sarnovský, Brno, ČR, 10. - 12. 10.
- M. Vadovský, Brno, ČR, 10. - 12. 10.
- M. Smatana, Brno, ČR, 10. - 12. 10.
- P. Šatala, Brno, ČR, 10. - 12. 10.
- J. Ivančáková, Brno, ČR, 10. - 12. 10.
- Ľ. Pusztová, Brno, ČR, 10. - 12. 10.
- K. Machová, Miškolc, Maďarsko, 15. 10. - 15. 10.
- P. Papcun, Auckland, Nový Zéland, 30. 11. - 8. 12.
- F. Babič, Plzeň, ČR, 27. - 29. 11.
- P. Bednár, Plzeň, ČR, 27. - 29. 11.
- M. Sarnovský, Plzeň, ČR, 27. - 29. 11.
- P. Sinčák, Viedeň, Rakúsko, 3. - 6. 12.
- M. Bundzel, Viedeň, Rakúsko, 3. - 6. 12.
- G. Magyar, Viedeň, Rakúsko, 3. - 6. 12.
- F. Babič Hradec Králové, ČR, 13. 12. - 14. 12.
- P. Butka, Tenerife, Španielsko 15. 12. - 20. 12.
- P. Bednár, Viedeň, Rakúsko 3. - 6. 12.
- J. Ivančáková, Viedeň Rakúsko 3. - 6. 12.
- D. Vošček, Ženeva, Švajčiarsko, 7. - 17. 12.
- M. Jaščur, Berkeley, USA, 15. 10. - 30. 11.

7   THESES

Thesis type	Bachelor	Master	Doctoral
Number	61	65	6

8   OTHER ACTIVITIES

- DISA 2018: World Symposium on Digital Intelligence for Systems and Machines, IEEE, was held in August 23-25, 2018 in Košice, Slovakia
- SAMI 2018 (IEEE 16th International Symposium on Applied Machine Intelligence and Informatics) was held on February 7-10, 2018 in Herl'any, Slovakia

9   PUBLICATIONS

9.1.   Books

[1] BICEKOVÁ, Anna: Formovanie regionálnej samosprávy a jej príjmov v podmienkach Slovenskej republiky. 1. vyd - Košice: TU - 2018. - 74 s. ISBN 978-80-553-2678-8.

9.1   Journals

[1] ACHARYA, S. - ADAMOVA, D. - AGGARWAL, M.M. - RINELLA, G.A. - AGNELLO, M. - ČABALA, Ján - JADLOVSKÁ, Slávka - JADLOVSKÝ, Ján -

KOPČÍK, Michal - ORAVEC, Matej - VOŠČEK, Dominik - VAĽA, Martin: First measurement of jet mass in Pb-Pb and p-Pb collisions at the LHC. 2018. In: Physics Letters B. Vol. 776 (2018), p. 249-264. - ISSN 0370-2693

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[6] SILBER, Elizabeth - NICULESCU, Mihai - BUTKA, Peter - SILBER, Reynold: Nitric Oxide Production by Centimeter-Sized Meteoroids and the Role of Linear and Nonlinear Processes in the Shock Bound Flow Fields. 2018. In: Atmosphere. - Basel (Švajčiarsko): MDPI Roč. 9, č. 5 (2018), s. 1-21 [print]. - ISSN 2073-4433

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9.2   Other publications

Publication Type	Confereces		Other
	Foreign	Home	
Number	28	38	15