Dr. Levente Adalbert Kovács

Associate professor
electric engineer, biomedical engineer
Email: lkovacs@iit.bme.hu, klevi77@yahoo.com

1. PERSONAL DATA

Date of birth: 12 of April 1977
Place of birth: Resita, Romania
Address: H-1097 Budapest, Tóth Kálmán u. 33, A/II/3

2. EDUCATION

1995 – 2000	**"Politehnica" University of Timişoara**, Faculty of Control Engineering and Computer Science, specialization: Automation and Industrial Informatics.
2000 – 2001	**Postgradual training in Industrial Control**, "Politehnica" University of Timişoara, Automation and Industrial Informatics.
2002 – 2008	**PhD student**, Budapest University of Technology and Economics, Electric Engineering Doctoral School. Supervisor: Prof. Dr. Zoltán Benyó.
	PhD thesis title: *New principles and adequate control methods for insulin dosage in case of diabetes*
2006 –2010	**Postgradual training in Biomedical Engineering**, Budapest University of Technology and Economics.

3. TEACHING ACTIVITY (2000-present)

2011 –	Budapest University of Technology and Economics (BME), *associate professor*.
2008 – 2011	Budapest University of Technology and Economics (BME), *senior lecturer*.
2005 – 2008	Budapest University of Technology and Economics (BME), *teacher assistant*.
2000 – 2006	"Politehnica" University of Timişoara (TME), *teacher assistant*.
2006 – 2007	"Politehnica" University of Timişoara (TME), *invited lecturer*.
2001 – 2004	Partium Christian University of Oradea (PKE), *part time teacher assistant*.

4. LECTURES

In Hungarian:	Process Control (BME), Biomedical process simulation (BME), Chemical and biomedical measurements (BME), Project Laboratory (BME), Computer architecture (PKE).
In English:	Analysis and Simulation of Physiological Control Systems (BME), Control Engineering (BME), Biomedical Engineering (BME).
In Romanian:	Process control (TME), Control theory (TME), Introduction in control theory (TME).

5. SPECIALITY

- Physiological modeling and control;
- Robust control theory;
- Biomedical engineering;
- Bioinformatics.

6. RESEARCH AND PROJECTS OVERVIEW

- Development and biostatical evaluation of new control methods for optimal control of cancer chemotherapy (2011-);
- Development of classical and modern control algorithms for effective telesurgical applications (2011-);
- Development of robust blood glucose control for ICU (2010-);
- Patient motion compensation in surgical robotics (2010-);
- Electromagnetic noise and error measurement, calibration and tool integration in surgical robotics (2010-);
- Development of robust control algorithms for insulin injection in case of type 1 diabetes mellitus (2007-2010);
- Development of new methods for the risk estimation of obese population (2007-2010);
- Design of NFC based mobile applications (2006-2009);
- Human factor in controlled vehicle systems (2004-2008);
- Medical information system for diagnosing and monitoring diabetes mellitus in children (2003-2004);
- Medical information system for diagnosing hearing disorder in children (2003-2005);
- Temperature control with industrial DeltaV system (2002-2004);
- Control of the Three Tank System (2001-2002).

7. PROJECTS INVOLVED

- Austrian-Hungarian Research and Educational Foundation, OMAA 82öu11 project, „*Symbolic Computation and Automated Reasoning for the Numeric Analysis of Diabetes Models*" (2011-2012), project co-leader, 2 462 000 Ft.
- "*Development of quality-oriented and harmonized R+D+I strategy and functional model at BME*" project, New Széchenyi Plan (Project ID: TÁMOP-4.2.1/B-09/1/KMR-2010-0002) (2010-2012), researcher.
- Hungarian National Scientific Research Foundation, OTKA 82066, "*Novel methods for the improvement of medical diagnostics*" (2010-2014), professional coordinator of one research task, 17 004 703 Ft;
- Hungarian National Scientific Research Foundation, OTKA 80316, "*Quality and safety improvements of image guided surgical procedures and nuclear medical imaging using advanced computer science*" (2010-2013), professional coordinator of two research tasks, 37 203 500 Ft;
- Hungarian National Scientific Research Foundation, OTKA T69055, "*Development of new measurement and control methods, and their bioinformatics applications, for early diagnosis and optimal treatment of metabolic diseases*" (2007-2010), professional coordinator, 10 785 000 Ft;
- Hungarian National Office for Research and Technology (NKTH), RET-04/2004, "*Electronic Vehicle and Vehicle Control*" (2004-2008), professional coordinator, 30 000 000 Ft;
- Hungarian National Office for Research and Technology (NKTH), TECH_08-A2/2, "DIAD_NFC *Independent Dynamic NFC Applications – Concept and implementation*" (2009-2012), researcher;
- EU 6th Framework IST project, "*StoLPaN - Store Logistics and Payment with NFC*" (2006-2009), researcher;
- Hungarian National Office for Research and Technology (NKTH), TeraTomo project, "*Developing teraflop capacity image reconstruction system built in tomography devices with different modality medical diagnostics*" (2009-2012), researcher;
- Hungarian National Scientific Research Foundation, OTKA T042990, "*Diagnostic-purpose Research of Biological Signals using System Theory*" (2002-2006), PhD student;

- Romanian National University Research Council (CNCSIS), 36681/ 3/ 2000, "*Investigating the development of new system stability analyzing methods of fuzzy control for energetic processes*" (2000-2002), <u>researcher</u>.
- Romanian National University Research Council (CNCSIS), 34977/ 35/ 2001, "*Investigating the development of robust control fuzzy system methods based on parameter sensitivity*" (2001-2003), <u>researcher</u>.
- Romanian National University Research Council (CNCSIS), 34977/ 34/ 2001, "*Investigating new stability methods for Takagi-Sugeno type fuzzy control systems*" (2001-2003), <u>researcher</u>.

8. PROFESSIONAL AFFILIATIONS AND CONTRIBUTIONS

a. International and Hungarian Committees:

IFAC TC 8.2 "Biological and Medical Systems" member	2010-
Hungarian Diabetes Association member (13201)	2010-
Hungarian Artificial Pancreas working group leader	2010-
IEEE Hungary Section, Membership Development Officer	2010-
IEEE member (90492405)	2009-
Hungarian Academy of Science, Section of Engineering Sciences, Committee on Automation and Computer Science corresponding member (18768)	2008-
MATE Control Theory section, member of management board (9007)	2007-
SRAIT (Romanian Society of Control Engineering and Technical Informatics) member	2000-2006
EMT (Transylvanian Technical Society) member	2000-2002

b. Reviewer activities

Reviewer of International conferences:
- 16th IFAC Symposium on System Identification (SYSID 2012) 2012;
- IFAC World Congress 2011;
- IEEE International Symposium on Applied Machine Intelligence and Informatics (SAMI) 2011-;
- 5th European Conference of the International Federation for Medical and Biological Engineering (EMBEC) 2011-;
- IEEE International Symposium on Applied Computational Intelligence and Informatics (SACI) 2011-;
- IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics (ICCC-CONTI) 2010-;
- 9th International Workshop on Robotics in Alpe-Adria-Danube Region (RAAD) 2010;
- IEEE Engineering in Medicine and Biology Conference (EMBC) 2009-;
- International Symposium on Bio- and Medical Informatics (BMIC) 2008-;
- IFAC Symposium on Robust Control Design (ROCOND) 2006;
- International Conference on Recent Achievements in Mechatronics, Automation, Computer Science and Robotics (MACRo) 2011.

Reviewer of International journals:
- IEEE Transactions on Automation Science and Engineering;
- IEEE Transactions on Automatic Control;
- IEEE Transactions on Biomedical Engineering;
- Computer Methods and Programs in Biomedicine;
- Computer Methods in Biomechanics and Biomedical Engineering;
- Optimal Control Applications and Methods;
- Biomedical Engineering Online;
- Journal of Control;
- International Journal of Biomedical Engineering and Technology;

- Journal of Theoretical Biology;
- Journal of Healthcare Engineering;
- Journal of Control Science and Engineering;
- Periodica Polytechnica, Electrical Engineering;
- Serbian Journal on Electrical Engineering.

Journal editorial board member
- Biomedical Engineering Research 2008-

Grant reviewer
- NKTH Baross Gábor Program Hungary – Regional Innovative Developments;
- National Office for Research and Technology Hungary.

c. Conference organization

- Local Organizing Committee member:
  - IFAC BMS 2012 – 8th IFAC Symposium on Biological and Medical Systems, Budapest, editor.
  - EMBEC 2011 – 5th European Conference of the International Federation for Medical and Biological Engineering, Budapest.
  - 10 years of Biomedical Engineering education in Hungary, Budapest, Hungary, July 20-21, 2005.
  - International Scientific Student Conference of Hungarian Students, Timisoara, Romania, 2000.
  - International Scientific Student Conference of Hungarian Students, Timisoara, Romania, 1999.
- Technical Committee member:
  - INES– IEEE International Conference on Intelligent Engineering Systems, 2012-.
  - MACRo– International Conference on Recent Achievements in Mechatronics, Automation, Computer Sciences and Robotics, Targu-Mures, Romania, 2010-.
  - ICCC-CONTI – IEEE International Joint Conferences on Computational Cybernetics and Technical Informatics, Timisoara, Romania, 2010-.
  - SACI – IEEE International Symposium on Applied Computational Intelligence and Informatics, Timisoara, Romania, 2011-.
  - SAMI – IEEE International Symposium on Applied Machine Intelligence and Informatics, Smolenice, Slovakia, 2011-.
  - SYSI – IEEE International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, 2010-.
  - SSC 2010 – 8th Student Science Conference, Budapest.
  - Budamed'08, Hungarian Biomedical Conference, Budapest, Hungary, 2008.
- Special / Invited Session Organizer:
  - "*Nonlinear and robust methods for identification and control of biological and medical systems*", IFAC BMS 2012 – 8th IFAC Symposium on Biological and Medical Systems, Budapest.
  - "*Recent Advances in Biomedical Engineering*", MACRo 2011 – International Conference on Recent Achievements in Mechatronics, Automation, Computer Sciences and Robotics, Targu-Mures, Romania.
  - "*Special Session on Biomedical Engineering*", SACI 2009 – 5th International Symposium on Applied Computational Intelligence and Informatics, Timisoara, Romania.
  - "*Special Session on Biomedical Engineering*", CONTI 04 – 6th International Conference on Technical Informatics, Timisoara, Romania.

d. Public activities

- IEEE POCO 2012 – 7th Annual Panel of Conference Organizers, 2012. 07. 19-21.
- ERASMUS bilateral agreement for higher education Budapest (HU) – Timisoara (RO) (2010-2013).
- TECHNÉ (Hungarian University Teachers Society form Timisoara) founder and vice-president (2002-2004).

- CEEPUS coordinator, H-140, (2002).
- BME, Biomedical Engineering Education web-page editor (2003-2007).

e. Awards, trainings

- Bolyai János Research Fellowship, Hungarian Academy of Sciences, 2012-2015;
- MATE award (60th jubilee), 2012;
- R+D project knowledge, New Széchenyi plan program, BME, 2012;
- MATE diploma prize, IIIrd prize, 2011.
- BME rector's award for student conference and scientific work coordination, 2009.
- Hungarian Pro Scientia diploma for scientific work coordination, 2009.
- Sanofi-Aventis/ Chinoin science award memorial certificate, 2009.
- SRAIT (Romanian Society of Control Engineering and Technical Informatics) diploma for best graduate 2000.

f. Visiting research

- Nanyang Technological University, School of Mechanical & Aerospace Engineering, Singapore, November 20-29, 2011.
- Delft Center for System and Control, Netherlands, Delft, November 20-27, 2008.
- Research Institute for Symbolic Computation (RISC) Linz fellowship, May, 2006.
- Tempus fellowship – Amira GmbH, Duisburg, February-March, 2001;

9. FOREIGN LANGUAGES

- **English**   intermediate (FCE diploma);
- **German**   beginner;
- **Romanian**   native.

                                        Dr. Levente Adalbert Kovács
Budapest, 23 July 2012.