CURRICULUM VITAE

JOZSEF LACZKO

Education:

Eotvos Lorand University, Budapest	Computer Science	1976-1978
Eotvos Lorand University, Budapest	Mathematics	1978-1982
Degrees:		
Eotvos Lorand University, Budapest	**M.Sc.Mathematics**	1982
Eotvos Lorand University, Budapest	**Ph.D. Mathematics**	1997
University of Pecs, Pecs	**Dr. Habil. Biology,**	2015

Current positions:

Senior Research Associate,
Head of Neurorehabilitation and Motor Control Research Group,
Wigner Research Centre for Physics, Budapest, Hungary 2013 – Present

Associate Professor,
Pázmány Péter Catholic University,
Faculty of Information Technology and Bionics, Budapest, Hungary 2006 – Present

Former professional experience:

Associate Professor
Head of Department of Information Technology and Biorobotics,
Institute of Mathematics and Informatics
Faculty of Science, University of Pecs, Pecs, Hungary 2013 –2022

Adjunct Associate Professor,
Department of Neuroscience, Feinberg School of Medicine,
Northwestern University, Chicago IL USA 2013 -2022

Associate professor
Faculty of Physical Education and Sport Sciences, Semmelweis University, Budapest, Hungary 1996 – 2012

Senior Research Associate (part time)
Research Institute for Technical Physics and Materials Science of the Hungarian Academy of Sciences, Budapest 1997-2005

Research Associate (part time)
Semmelweis Medical University, Dept. of Anatomy, Budapest, Hungary 1993

Research Associate 1982-1996
Research Institute for Measurement and Computing Techniques of the Hungarian Academy of Sciences

Research fellowships

1984 (6 months)	**Hatfield Polytechnic, School of Information Sciences, UK** *research associate*
1986 (5 months)	**Dept. of Physiology and Biophysics,** **New York University, School of Medicine, New York, USA** *Research associate*
1990-91 (14 months)	**CNRS, Lab. de Physiology Neurosensorielle, Paris, France** *Research fellow*
1991-92 (12 months)	**Ludwig-Maximilians University, München, Germany** *Research grantee of the European Space Agency*

1993 (3 months)	**Ludwig-Maximilians University, München, Germany** Deutsche Forschungs Gemeinschaft
1999 (9 months)	**Dept. of Physiology and Neuroscience,** **New York University, School of Medicine, New York USA** *Research fellow*
2004 (3 months)	**New York University, School of Medicine, New York USA** *Fulbright Research fellowship*
2013 (6 months)	**Northwestern University, Department of Physiology, and Rehabilitation Institute of Chicago, Chicago USA** *Senior Research Fellowship form the Hungarian-American Enterprise Scholarship Fund*

Short scientific visits by invitation (1 month)

New York University, Medical Center, Dept. of Physiology and Neuroscience	1988
Laboratoire de Physiologie Neurosensorielle, CNRS, Paris, France	1989
Ben Gurion University, Dept. of Mechanical Engineering, Beer Sheva, Israel	1991
Pennsylvania State University, Dept. of Kinesiology, State College, PA, USA	1998, 2001
Institute for Working Life, University of Umea, Sweden	2000, 2002

Research Topics and interests:

- Biomedical Engineering and Rehabilitation.
- Modeling and computer simulation of biomechanics of limb movements.
- Functional Electrical Muscle-Stimulation of Spinal Cord Injured people.
- Control of multi-joint movements, structure of smoothness of limb movements
- muscle synergies
- human-machine interfaces

Invited lecture appearences:

École Normale Supérieure de Lyon (Lyon Cyberbike 2019), Lyon, France
Serbian Academy of Sciences and Art (Belgrad, Serbia), 2018
Cajal Institute, Madrid, (Spain) 2018
University of Georgia, Athens (GA) 2018
University of Minnesota, Minneapolis (MN) 2013, 2015
Instituto Italiano di Tecnologia, Genova (Italy) 2012
Rehabilitation Institute of Chicago, Chicago (IL) 2011
Ludwig-Maximilians University, Munchen (GERMANY), 2011
East Caroline University, Greenville (NC, USA), 2004
University of Umea, Umea, (SWEDEN), 2002
University of Maribor, (SLOVENIA) 1997
Rush University, Chicago (IL), 1994
Universite de Bourgogne, Dijon (FRANCE), 1994
University of the Negev, Beer Sheva (ISRAEL), 1990, 1991
Multidisciplinary Inst. for Neuropsyhological Development, Cambridge (MA), 1988,
Satellite Symp. of Intnl. Brain Research Organization's II. World Congr. Budapest (HUNGARY),1987,

Supervision of PhD students,

5 PhD students received PhD degrees and 2 is under current supervision.

Research grants (PI):

Hungarian coordinator of the European program titled "Restoration of Muscle Activities through Functional Electrical Stimulation (RAFT)" in the frame of the European BIOMED program 1994-1995.

French - Hungarian scientific cooperation: (OMFB-APAPE) Ref N.68 1994-1995

Hungarian Ministry of Culture: Teaching and Research in Higher Education 1994-1997,

Ministry of Welfare (Hungary): Movement-analysis,
Research project with the Heim Pal Children's Hospital, Budapest, Hungary 1997-1999,

Hungarian Scientific Research Fund (OTKA), Hungary:
1. Natural solution for the inverse kinematic problem: joint synergies. 1999-2001,

2. Controlling of multi-joint limb movements. 2001-2005,

Research Council of the Ministry of Healthcare (Hungary):
Modeling the neuro-mechanical control of limb movements, 2006-2008

Hungarian Society for Sport Science: 2012
Application of functional electrical stimulation for controlling limb movements of para-athletes.

Austrian-Hungarian Scientific and Educational Cooperation Action Fund: 2016-2017
Development of rehabilitation protocols for spinal cord injured people. (94öu7).

Research grants (participant**):**
Formation of Research Centre of Neurorehabilitation and Human-Computer Interaction at the University of Pécs" (grant number GINOP-2.3.3.-15-2016-00032) 2016-2020

Establishment of an interdisciplinary research, education and development center at the University of Pécs using 3D printing and visualization technologies'' (grant number GINOP-2.3.2.-15-2016-00022). 2016-2020

Force plate based examination of the effect of functional electrical stimulation assisted trainings on gait abilities in rehabilitation of spinal cord injured patients. (grant number: TKP2021-EGA-35)
National Institute for Medical Rehabilitation, Budapest Hungary 2022-2023

Reviewer of the following journals:
Anatomical Records, Acta Physiologica Hungarica, Biomedical Signal Processing, Experimental Brain Research, Journal of Motor Behavior, Journal of Neurophysiology, Motor Control,

Professsional service:
Chair of the international conference entitled "Progress in Motor Control X." Budapest, 2015.
Director of the Motor Control Summer School IX. Intnl. Society for Motor Control, 2012 Tihany, Hungary

Selected publications:

Botzheim L, Ernyey D, Mravcsik M, Varaljai L, Klauber A, Cserhati P, **Laczko J** (2022): Changes in active cycling time and distance during FES-assisted cycling before and after the pandemic closure—A case study. Artificial Organs, Vol 46 (1), E178-E182.

Radeleczki, B., Mravcsik, M., Bozheim, L., & **Laczko, J**. (2022). Prediction of leg muscle activities from arm muscle activities in arm and leg cycling. The Anatomical Record. https://doi.org/10.1002/ar.25004

Botzheim L, **Laczko J**, Torricelli D, Mravcsik M, Pons JL, Barroso FO (2021): Effects of gravity and kinematic constraints on muscle synergies in arm cycling. Journal of Neurophysiology. Vol 125 (4), pp. 1367-1381. https://doi.org/10.1152/jn.00415.2020

Mravcsik M, Botzheim L, Zentai N, Piovesan D, **Laczko J** (2021): The Effect of Crank Resistance on Arm Configuration and Muscle Activation Variances in Arm Cycling Movements. Journal of Human Kinetics, Vol 76/2021, pp. 175-189. https://pubmed.ncbi.nlm.nih.gov/33603933

Heckel Z, Atlasz T, Tékus E, Kőszegi T, **Laczkó J**, Váczi M. (2019): Monitoring exercise-induced muscle damage indicators and myoelectric activity during two weeks of knee extensor exercise training in young and old men. PLOS ONE 14: 11 Paper: e0224866, 16 p.

Barroso FO, Pascual-Valdunciel A, Torricelli D, Moreno JC, Del Ama-Espinosa A, **Laczko J**, Pons JL (2019): Noninvasive Modalities Used in Spinal Cord Injury Rehabilitation. Book chapter in Book: Spinal Cord Injury Therapy; DOI:10.5772/intechopen.83654

Laczko J, Scheidt RA, Simo LS, Piovesan D. (2017): Inter-joint coordination deficits revealed in the decomposition of endpoint jerk during goal-directed arm movement after stroke. IEEE Trans Neural Systems Rehabil Eng. V. 25 Issue: 7 pp.: 798-810.

Laczko J, Mravcsik M, Katona P. (2016) Control of Cycling Limb Movements: Aspects for Rehabilitation. Advances in Experimental Medicine and Biology. 957:273-289. doi: 10.1007/978-3-319-47313-0_15.
Katona P, Pilissy T, Tihanyi A, **Laczko J**. (2014): The Combined Effect of Cycling Cadence and Crank Resistance on Hamstrings and Quadriceps Muscle Activities during Cycling. Acta Physiologica Hungarica, Vol. 101 (4), pp. 505–516.

Tibold R, **Laczko J**. (2012): The effect of load on torques in point-to-point arm movements: a 3D model. Journal of Motor Behavior. Vol. 44 No.5. pp. 341-350.

Tibold R, Fazekas G, **Laczko J** (2011): Three-dimensional model to predict muscle forces and their relation to motor variances in reaching arm movements. Journal of Applied Biomechanics, 27, pp. 362-374.
Laczkó J (2011): Modeling of Human movements, Neuroprostheses. Clinical Neuroscience/Ideggyogy Szle. 64(7-8) pp. 162-167.

Kerestényi, Z., Cesari, P., Fazekas, G., **Laczkó, J**. (2009). The relation of hand and arm configuration variances while tracking geometric figures in Parkinson's disease - "aspects for rehabilitation". International Journal of Rehabilitation Research, Vol 32(1): 53-63.

Pilissy T, Klauber A, Fazekas G, **Laczkó J**, Szécsi J. (2008): Improving functional electrical stimulation driven cycling by proper synchronization of the muscles. Clinical Neuroscience/Ideggyogy Szle.61(5-6) pp. 162-167.

Kerestényi Z., Valkovič P., Eggert T., Steude U., Hermsdörfer J., **Laczkó J**. Böetzel K. (2007): The time course of the return of upper limb bradykinesia after cessation of subthalamic stimulation in Parkinson's disease. In: Pakinsonism and Related Disorders. 13(7): 438-42 IF: 2.021

Laczko J, Walton K, Llinas R (2006): A □neuro - mechanical transducer model for controlling joint rotations and limb movements. Clinical Neuroscience/Ideggy Szle, 59.(1-2):32-43.

Domkin D, **Laczko J**, Djupsjöbacka M, Jaric S and Latash ML (2005) : Joint angle variability in 3D bimanual pointing: uncontrolled manifold analysis. Experimental Brain Research, V.163. pp.44-57.

Domkin D., **Laczko J**., Jaric S., Johansson H., Latash ML. (2002): Structure of joint variability in bimanual pointing tasks. Experimental Brain Research V.143. pp.11-23.

Laczko J, Jaric S, Tihanyi J, VM. Zatsiorsky & Mark L. Latash (2000) "Components of the End-Effector Jerk during Voluntary Arm Movements" Journal of Applied Biomechanics V.16. pp 14-26