

## Europass Curriculum Vitae



### Personal information

**First name(s) / Surname(s)** **László SZILÁGYI**  
**Address(es)** 8 Franz Liszt st, 540068 Tîrgu Mures, Romania  
**Telephone(s)** +40 747 352560, +36 70 2428204  
**E-mail** [lazacika@yahoo.com](mailto:lazacika@yahoo.com) [lalo@ms.sapientia.ro](mailto:lalo@ms.sapientia.ro)  
**Date of birth** January 12, 1975  
**Gender** Male

### Work experience

<p><b>Dates</b></p> <p><b>Main activities and responsibilities</b></p> <p><b>Name and address of employer</b></p>	<p>Since Feb 2017</p> <p>Teaching Image processing to masters students</p> <p>John von Neumann Faculty of Informatics, Óbuda University, Budapest</p>
<p><b>Dates</b></p> <p><b>Occupation or position held</b></p> <p><b>Main activities and responsibilities</b></p> <p><b>Name and address of employer</b></p>	<p>Since Sep 2004</p> <p>Full professor (since 2015), Associate professor (2010-2015), Lecturer (2004-2010)</p> <p>Teaching engineering and computer science students, research</p> <p>Sapientia University of Cluj Napoca, Romania Faculty of Technical and Human Sciences of Tîrgu Mureş</p>
<p><b>Dates</b></p> <p><b>Occupation or position held</b></p> <p><b>Main activities and responsibilities</b></p> <p><b>Name and address of employer</b></p>	<p>Since Oct 2012</p> <p>Postdoc researcher</p> <p>Research in the field of modelling and control in biomedical systems</p> <p>Budapest University of Technology and Economics Dept. Control Engineering and Information Technology (2x3 months in 2015-16 spent at University of Canterbury, Christchurch, New Zealand, funded by Marie Curie IRSES mobility project)</p>
<p><b>Dates</b></p> <p><b>Occupation or position held</b></p> <p><b>Name and address of employer</b></p>	<p>Sep 2002 – Sep 2004</p> <p>Research assistant, software developer</p> <p>Budapest University of Technology and Economics, Hungary Dept. of Control Engineering and Information Technology (one month in 2004 spent at Siemens, Braunschweig, Germany)</p>

Dates Aug 2000 – Sep 2001  
 Occupation or position held Senior consultant  
 Name and address of employer Samstock Oy, Jyväskylä, Finland  
 Type of business Software development, stock exchange databases

### Education, training, and degrees

Dates April 2017  
 Title of qualification awarded Habilitation  
 Principal subjects covered Clustering algorithms, image processing, fuzzy logic  
 Name and type of organisation providing education and training Babeş-Bolyai University of Cluj-Napoca, Romania, Department of Informatics

Dates Sep 1998 – Aug 2000 & Sep 2001 – Aug 2002  
 Title of qualification awarded PhD (degree awarded in 2009)  
 Principal subjects covered Medical image processing, clustering algorithms, fuzzy logic  
 Name and type of organisation providing education and training Budapest University of Technology and Economics, Hungary Faculty of Electrical Engineering and Informatics  
 Thesis available at <http://www.doktori.hu/index.php?menuid=193&vid=1592&lang=EN>

Dates Oct 1993 – Jul 1998  
 Title of qualification awarded Five-year engineering education program  
 Principal subjects covered Automation and industrial informatics  
 Name and type of organisation providing education and training Petru Maior University of Tîrgu Mureş, Romania (two months in 1997 spent at Université Bordeaux I, France, as exchange student)

### Personal skills and competences

Languages **Hungarian** (mother tongue)

Other language(s)

Self-assessment

European level (\*)

	Understanding		Speaking		Writing
	Listening	Reading	Spoken interaction	Spoken production	
<b>English</b>	C1	C2	C1	C1	C1
<b>Romanian</b>	C1	C2	C1	C1	C1
<b>Spanish</b>	B1	B2	A2	A2	B1
<b>German</b>	A2	A2	A2	A2	A2
<b>French</b>	A2	A2	A2	A2	A2
<b>Finnish</b>	A1	A2	A1	A1	A2

(\*) [Common European Framework of Reference for Languages](#)

Programming languages and technologies C/C++, Matlab, Java, C#, Python, MPI, OpenMP

Operating systems Windows, Linux

Research interests	supported by relevant publications
Pattern recognition, artificial intelligence	<p>Szilágyi L, Szilágyi SM: <a href="#">Generalized suppression rules for the suppressed fuzzy c-means algorithm</a>. Neurocomputing 139:298-309 (2014)</p> <p>Szilágyi L: <a href="#">Robust spherical shell clustering using fuzzy-possibilistic product partition</a>. International Journal of Intelligent Systems 28(6):524-539 (2013)</p> <p>Szilágyi L, Szilágyi SM, Benyó Z: <a href="#">Analytical and numerical evaluation of the suppressed fuzzy c-means algorithm: a study on the competition in c-means clustering models</a>. Soft Computing 14(5):495-505 (2010)</p>
Bioinformatics, protein network analysis, high performance computing	<p>Szilágyi SM, Szilágyi L: <a href="#">A fast hierarchical clustering algorithm for large-scale protein sequence data sets</a>. Computers in Biology and Medicine 48:94-101 (2014)</p> <p>Szilágyi L, Medvés L, Szilágyi SM: <a href="#">A modified Markov clustering approach to unsupervised classification of protein sequences</a>. Neurocomputing 73(13-15):2332-2345 (2010)</p> <p>Szilágyi L, Szilágyi SM: <a href="#">A modified two-stage Markov clustering algorithm for large and sparse networks</a>. Computer Methods and Programs in Biomedicine 135:15-26 (2016)</p>
Biomedical image and signal processing	<p>Szilágyi L: <a href="#">Lessons to learn from a mistaken optimization</a>. Pattern Recognition Letters 36(1):29-35 (2014)</p> <p>Haidegger T, Nagy M, Lehotsky Á, Szilágyi L: <a href="#">Digital imaging for the education of proper surgical hand disinfection</a>. MICCAI 2011 Toronto, LNCS 6893:619-626 (2011)</p> <p>Szilágyi L, Benyó Z: <a href="#">Development of a virtual reality guided diagnostic tool based on magnetic resonance imaging</a>. Acta Physiologica Hungarica 97(3):267-280 (2010)</p>
Modeling and control in biomedical systems	<p>Szilágyi L, Szilágyi SM, Benyó B: <a href="#">Efficient inhomogeneity compensation using fuzzy c-means clustering models</a>. Computer Methods and Programs in Biomedicine 108(1):80-89 (2012)</p> <p>Szilágyi SM, Szilágyi L, Benyó Z: <a href="#">A patient specific electro-mechanical model of the heart</a>. Computer Methods and Programs in Biomedicine 101(2):183-200 (2011)</p> <p>Szilágyi L, Szilágyi SM, Benyó B, Benyó Z: <a href="#">Intensity inhomogeneity compensation and segmentation of MR brain images using hybrid c-means clustering models</a>. Biomedical Signal Processing and Control 6(1):3-12 (2011)</p>
Infection control and public health	<p>Szilágyi L, Haidegger T, Lehotsky Á, Nagy M, Csonka EA, Sun XY, Ooi KL, Fisher D: <a href="#">A large-scale assessment of hand hygiene quality and the effectiveness of the "WHO 6-steps"</a>. BMC Infectious Diseases 13(249):1-10 (2013)</p> <p>Lehotsky Á, Szilágyi L, Ferenci T, Kovács L, Pethes R, Wéber Gy, Haidegger T: <a href="#">Quantitative impact of direct, personal feedback on hand hygiene technique</a>. Journal of Hospital Infection 91(1):81-84 (2015)</p> <p>Lehotsky Á, Szilágyi L, Bánsághi Sz, Szerémy P, Wéber Gy, Haidegger T: <a href="#">Towards objective hand hygiene technique assessment: validation of the ultraviolet-dye-based hand-rubbing quality assessment procedure</a>. Journal of Hospital Infection 97(1):26-29 (2017)</p>
Further research topics of interest	<p>Parallel architectures, parallel programming, big data All journal articles available <a href="#">here</a>.</p>
Independent citations	800 independent citations, h-index: 13
Most important research projects as principal investigator	<p>OTKA PD 103921: Modern robust fuzzy c-means clustering techniques (Hungary, Oct 2012 – Dec 2015, 70000 EUR)</p> <p>CNCSIS PD 28/05.08.2010: Advanced Image Segmentation and Registration Methods, with Applications in Medical Intervention Systems (Romania, Aug 2010 – Aug 2012, 75000 EUR)</p> <p>Participated 15 further research projects as team member.</p>
Patents	<p>Haidegger T, Lehotsky Á, Nagy M, Szilágyi L: Method and apparatus for hand disinfection control quality. US Patent 9,424,735 B2, 23 August 2016</p>

<b>International visibility</b>	<p>Co-founder of start-up company <a href="#">Hand-in-Scan ZRT</a> (Budapest).</p> <p>Conference program committee member at: MDAI – Modeling Decisions for Artificial Intelligence (yearly, since 2012), Pacific-Rim Symposium on Image and Video Technology (2017), IFAC BMS Symposium on Biomedical Systems (2012).</p> <p>Reviewer for journals: Medical Engineering and Physics, IEEE Transactions on Image Processing, Biomedical Signal Processing and Control, Pattern Recognition Letters, Computer Methods and Programs in Biomedicine, Computers in Biology and Medicine, Sensors, Information Sciences, Expert Systems with Applications, Pattern Analysis and Applications, Biomedizinische Technik - Biomedical Engineering.</p> <p>Reviewed for top rated conferences: Medical Image Computation and Computer Aided Interventions (MICCAI, 2007-2011), IEEE Int'l Symposium on Biomedical Imaging (ISBI, 2010-2013).</p>																
<b>Awards and prizes</b>	<p>János Bolyai Prize (Research Fellowship) of the Hungarian Academy of Sciences (2018)</p> <p>Robotics and Automation Award for Product Innovation, IEEE Robotics and Automation Society (2015), with Hand-in-Scan team</p> <p>Top 10 Paper of Year 2014, Computers in Biology and Medicine (2015), with co-author</p> <p>EIB Social Innovation Tournament, 1<sup>st</sup> Prize (Luxembourg, 2012), with Hand-in-Scan team</p> <p>Best Of Biotech - LISA VR Medtech Award (Vienna, Austria, 2012), with Hand-in-Scan team</p> <p>IEEE Presidents' Change the World Competition - Outstanding Student Humanitarian Prize (2011), with Hand-in-Scan team</p> <p>ICPIC Innovation Academy – 1<sup>st</sup> prize, (Geneva, 2011), with Hand-in-Scan team</p> <p>Innovact Campus Award – 1<sup>st</sup> prize (Reims, 2011), with Hand-in-Scan team</p> <p>János Bolyai Prize (Research Fellowship) of the Hungarian Academy of Sciences (2010)</p> <p>Ten journal articles awarded by UEFISCDI Human Resources Programs (2010-2017), with co-authors</p> <p>Zoltán Gyórfy Prize for excellent scientific and sport activity (1993)</p>																
<b>Teaching activity</b>	<p>BSc courses: Image processing, Pattern recognition, Modeling and Simulation, Computer graphics, Bioinformatics</p> <p>MSc courses: Evolutionary computation, Machine vision</p>																
<b>Mentoring activity</b>	<p>Introduced 13 MSc and BSc students into internationally visible research activity:</p> <table border="0"> <tr> <td><a href="#">Hatem S. ADAM</a></td> <td><a href="#">Lehel CRĂCIUN</a></td> <td><a href="#">Erik A. CSONKA</a></td> <td><a href="#">Gellért DÉNESI</a></td> </tr> <tr> <td><a href="#">Levente K. GÖRÖG</a></td> <td><a href="#">Zoltán KAPÁS</a></td> <td><a href="#">Csilla KISS</a></td> <td><a href="#">Sándor E. LÁSZLÓ</a></td> </tr> <tr> <td><a href="#">Lehel MEDVÉS</a></td> <td><a href="#">Lajos L. NAGY</a></td> <td><a href="#">Melinda NAGY</a></td> <td><a href="#">Lehel SZABÓ</a></td> </tr> <tr> <td><a href="#">ZSÓFIA SZABÓ</a></td> <td><a href="#">Zsuzsa R. VARGA</a></td> <td></td> <td></td> </tr> </table>	<a href="#">Hatem S. ADAM</a>	<a href="#">Lehel CRĂCIUN</a>	<a href="#">Erik A. CSONKA</a>	<a href="#">Gellért DÉNESI</a>	<a href="#">Levente K. GÖRÖG</a>	<a href="#">Zoltán KAPÁS</a>	<a href="#">Csilla KISS</a>	<a href="#">Sándor E. LÁSZLÓ</a>	<a href="#">Lehel MEDVÉS</a>	<a href="#">Lajos L. NAGY</a>	<a href="#">Melinda NAGY</a>	<a href="#">Lehel SZABÓ</a>	<a href="#">ZSÓFIA SZABÓ</a>	<a href="#">Zsuzsa R. VARGA</a>		
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