

# Curriculum Vitae

01.01.2018

## Sándor Imre DSc.

**BIRTH:** Budapest, Hungary, 23.06.1969

### CURRENT POSITION

2009- Professor, Head of Department of Networked Systems and Services, Budapest University of Technology and Economics (BME)  
2005- R&D Director of Mobile Innovation Center, Hungary

### ADDRESS

Department of Networked Systems and Services, Budapest University of Technology and Economics  
Magyar Tudósok krt. 2.  
Budapest,  
Hungary-1117.  
Tel: (+36) 1 463-3261, Fax: (+36) 1 463 3263,  
Email: IMRE@hit.bme.hu

### EDUCATION and DEGREES

2008 *Dr. habil., BME*  
2007 DSc. Hungarian Academy of Sciences  
Title of the Theses: *Quantum and Classical Methods to Improve the Efficiency of Infocom Systems*  
1999 Ph.D. in Electrical Engineering  
Title of the Theses: *Call Admission Control Methods in ATM Networks*  
1996 dr. univ. in Probability Theory and Mathematical statistics.  
Title of the Dissertation: *Application of Neural Networks for Call Admission Control in ATM Networks*  
1988-1993 M.Sc in Telecommunication Engineering, BME  
Title of the Thesis: "The Asynchronous Transfer Mode"

### EMPLOYMENT

2002-2008 Associate Professor, Department of Telecommunications, BME  
2000-2003 Scientific advisor, Computer and Automation Research Institute of Hungarian Academy of Sciences (MTA SZTAKI)  
1999-2002 Assistant Professor, Department of Telecommunications, BME  
1996-1999 Scientific research fellow, Department of Telecommunications, BME  
1995-1996 RTD Lab of Real Time Devices (USA) at BME, Topic: development of intelligent data acquiring and signal processing systems

1993-1996 Ph.D. student, Department of Telecommunications, BME

### **MEMBERSHIPS and POSITIONS**

2016- IEEE WIRELESS COMMUNICATIONS LETTERS, editor

2015- Member of the Scientific Board of BME

2015- Association for Computing Machinery (ACM), member

2015- Coordinator of BSc Education in Electrical Engineering at the Faculty of Electrical Engineering and Informatics, BME

2015- Evaluation Board of the Hungarian Scientific Research Found, member

2014- Doctoral Board of Hungarian Academy of Sciences

2013- Board of Advisors of the Hungarian-American Enterprise Scholarship Fund, *Member*

2011- Hungarian IPv6 Forum, *Chairman*

2010- Infocommunications Journal (ISSN 2061-2079), *Editor*

2010-2016 Assembly of Hungarian Academy of Sciences, *DSc. member*

2010- Acoustics Systems Complex Committee of Hungarian Academy of Sciences, *member*

2010- Habilitation Committee and PhD Council on Computer Sciences of the Faculty of Electrical Engineering and Informatics, BME

2006-2008 Education Committee of the Faculty of Electrical Engineering and Informatics, BME

2005- Scientific research director, Mobile Innovation Center of BME

2005- Telecommunications (journal in Hungarian), *Editor*

2003-2006 Education Committee Accreditation and Advisory Board of the Faculty of Electrical Engineering and Informatics, BME

2002- Scientific Committee for Telecommunications of Hungarian Academy of Sciences, (*member 2002-, Secretary 2004-2011, Chairman 2011-2017*)

2001- Hungarian Telecommunications (journal in Hungarian), *Editor*

2000- The Institute of Electrical and Electronics Engineers (IEEE), (*member 2000-2012, senior member 2012-*)

1999- Ph.D. Board of Hungarian Academy of Sciences, *member*

1998- Inter University Research Centre for Telecommunications and Informatics (ETIK), *Head of research team*

1998- Hungarian Scientific Association for Infocommunications, *Secretary of Education Committee (2001-2002), Head of Education Committee (2002-2005), Member of Steering Committee (2012-)*

1998- High Speed Networking Laboratory at BME, *Head of research team*

1997- Mobile Communications Laboratory at BME, *Founder and Scientific manager*

1996- National Geographic Society, *Member*

## **SPOKEN LANGUAGES**

English,  
German,  
Hungarian

## **AWARDS and SCHOLARSHIPS**

- 2017 Award of the Hungarian Academy of Sciences
- 2016 Pollák-Virág Publication Award of the Hungarian Scientific Association for Infocommunications
- 2015 Á. Milánkovich, G. Ill, K. Lendvai, S. Imre, S. Sándor: Research on Payload Aggregation of Packets in WSNs, In: SENSORNETS 2015: Proceedings of the 3rd International Conference on Sensor Networks. Angers, France, 11-13 February 2015. Paper 50 **BEST PAPER AWARD**
- 2012- *Senior member* of the Institute of Electrical and Electronics Engineers (IEEE)
- 2011 Gabor Dennis Award, Novofer Foundation
- 2011 Mate Galambos, Sandor Imre: New Method for Representation of Multi-qbit Systems Using Fractals In: ICQNM2011 The Fifth International Conference on Quantum, Nano and Micro Technologies, ISBN: 978-1-61208-151-9, Nice, France, 21-27. 08. 2011. **BEST PAPER AWARD**
- 2011 Pollák-Virág Publication Award of the Hungarian Scientific Association for Infocommunications
- 2010 Laszlo Kozma Award of BME Dept. of TMIT
- 2010 L Gyongyosi, S Imre: Computational Geometric Analysis of Physically Allowed Quantum Cloning Transformations for Quantum Cryptography, 4th WSEAS International Conference on COMPUTER ENGINEERING and APPLICATIONS (CEA '10). ISBN: 978-960-474-151-9, 27-29 January 2010, Cambridge, USA, pp. 121-126. Paper 18., **BEST PAPER AWARD**
- 2009 Pollák-Virág Publication Award of the Hungarian Scientific Association for Infocommunications
- 2009 Memorial Medal of the Hungarian Scientific Association for Infocommunications for its 60<sup>th</sup> anniversary
- 2009 L Gyongyosi, S Imre: „Quantum Informational Geometry for Secret Quantum Communication”, In: FUTURE COMPUTING 2009, ISBN 978-0-7695-3862-4, Athen, Greece, 15-20 November 2009, pp. 580-585., **BEST PAPER AWARD**
- 2007 Á. Huszák, S. Imre: " TFRC-Based Selective Retransmission For Multimedia Applications", 5th @WAS International Conference on Advances in Mobile Computing and Multimedia, MoMM2007, ISBN 978-3-85403-230-4, pp. 53-63., Jakarta, Indonesia, 3-5 December 2007. **BEST PAPER AWARD**
- 2005 Best speaker of ALCATEL Seminars 2001-2005

2005	B. Kovács, M. Szalay and S. Imre: „Modelling and Quantitative Analysis of LTRACK – Novel Mobility Management Algorithm”, 3 <sup>rd</sup> Inter. Conf. On Advances in Mobile Multimedia, MOMMS2005, 19-21 September, 2005, Kuala Lumpur, Malaysia, ISBN 3-85403-195-5, in the book serie books@ocg.at band 195 Oesterreichische Computer Gesellschaft, pp. 343-357. <b>BEST PAPER AWARD</b>
2005	Medal of the Master Teacher Honour, National Council for Undergraduate Research, Hungary
2004	Tivadar Puskás Award of the Hungarian Scientific Association for Infocommunications
2001	Rector’s Excellence Award of BME for supervision of students’ scientific research activities, 2001.
2001-2003	Hungarian Ministry of Education: György Békésy Post. Doc. Scholarship
2001	Accenture Post. Doc. Scholarship
1999-2004	Pannon GSM Professor Scholarship
1998-2000	Andersen Consulting Research Scholarship
1997	General Electric Research Scholarship
1995	Award of the MATÁV (Hungarian Telecom Company): “The most successful second year Ph.D. student in electrical engineering”

#### **PhD STUDENTS (year degree obtained)**

Máté Szalay PhD, 2007  
Vilmos Simon PhD, 2009  
Árpád Huszák PhD, 2010  
Sándor Szabó PhD, 2011  
László Bacsardi PhD, 2012  
Borbála Benkő PhD, 2013  
Péter Fazekas PhD, 2013  
László Gyöngyösi PhD, 2013  
Albert Mráz PhD, 2013  
Bálint Ary PhD, 2014  
Tamás Jursonovics PhD, 2014  
László Bokor PhD, 2014  
Zoltán Faigl PhD, 2015  
Gábor Gulyás PhD, 2015  
Péter Fülöp PhD, 2016

## TEACHING ACTIVITIES

Telecommunications, 1997-2002  
Introduction into mobile computing, 2000-2008  
Mobile telecommunications I., laboratory exercises, 2000-2001  
Mobile telecommunications II., laboratory exercises, 2000-2001  
State of the art mobile receiver algorithms, 2001-2002  
Mobile infocommunication, 2001-2008  
Quantum computing and communication, elective, 2001-  
Modelling and simulation analysis of mobile systems, 2001-  
Mobile telecommunications, laboratory exercises, 2001-2002  
Mobile computing, laboratory exercises, 2001-2002  
State of the art mobile communication technologies, 2003-  
Mobile Infocom Networks, 2009-  
Evolution of Mobile Systems, 2010-  
Quantum computing and communication, MSC 2016-

## SCIENTIFIC PROJECTS

2017-2021	<i>Development of Quantum Networks - HunQuTech, 2017-1.2.1-NKP-2017-00001</i>
2015-2018	Quantum communications in noisy environment, OTKA K112125
2014-	<i>Quantum Communications – National Future Internet Program, JINKA 2.2, T1C4 -</i>
2013-2015	<i>Information Systems, Research group of the Hungarian Academy of Sciences</i>
2013-2014	Device-free Positioning in Wireless Environment, EIT-KIC
2013-2015	<i>WSN-AQUA: HUSK project, Hungary-Slovakia Cross-border Co-operation Programme</i>
2013-14	Long Distance Secure Quantum Key Distribution, GOP-1.1.1-11-2012-0092
2013-14	Earth-Space Quantum Communications, TAMOP 4.2.2.C
2011-14	CONCERTO - Content and cOntext aware delivery for iNteraCtivemicro-multimEdia healthcaRe applicaTiOns , 2011-2014, EU 7 <sup>th</sup> Framework
2011-2014	TET_10-1-2011-0266, A Two-Tier Cellular Architecture with Robust Interference Capability and Optimal Resource Management Policy, Bilateral project Hungary-Singapore
2011-2013	COST Action MP1006 Fundamental Problems in Quantum Physics

2010-2012	CHIRON – Cyclic and person-centric Health management : Integrated appRoach for hOme, mobile and clinical eNvironments, EU ARTEMIS 2010-2012
2010-2011	RFID technology for supporting logistic systems, TÁMOP 421B
2010-2013	Secure Mobile Contactless Payment, BIRD, TECH-09
2009	StoLPaN EU IST program, 2009
2009	Office positioning and navigation system, GOP 1.3.1/B.
2009-2012	EARTH, EU 7 <sup>th</sup> Framework
2009-2012	EULER, EU 7 <sup>th</sup> Framework
2009-2012	SAMURAI, EU 7 <sup>th</sup> Framework
2009-2011	MEVICO-Celtic Mobile Networks Evolution for Individual Communications Experience
2009-2011	Bilateral German-Hungarian Project on Ambient Intelligence Systems (BELAMI II)
2008-2009	EURESCOM P1857, Ultra Flat Architecture for high bitrate services in fixed-mobile convergent networks
2008-2009	Location positioning and object monitoring system based on RFID technology, GOP-1.1.1-07/1-2008-2009
2008-2010	MobileVideo – Live video content generation for community services, NKTH National Technology Program
2009-2011	High intelligence, high reliability reconnaissance system for military and public use, NKTH National Technology Program
2008-2010	OPTIMIX, Optimisation of Multimedia over wireless IP links via X-layer design, EU 7 <sup>th</sup> Framework
2006-2008	ANEMONE, Advanced Next gEneration Mobile Open Network, EU 6th Framework
2006-2008	BIONETS, BIO-inspired NExt generaTion networkS, EU 6th Framework
2006-2008	CASCADAS, Component-ware for Autonomic Situation-aware Communications, and Dynamically Adaptable Services, EU 6th Framework
2006-2008	BOSS, On Board Wireless Secured Video Surveillance, EUREKA-Celtic,
2005-2008	Industrial Applications of RFID Technology, Jedlik-NKFP2/00015/2005
2005-2008	New Measurement Methods for QoS Provisioning Novel Infocom Applications, Jedlik-NKFP2/00015/2005
2005-2008	Bilateral German-Hungarian Project on Ambient Intelligence Systems (BELAMI)
2005-2007	Adaptive multimedia transmission in heterogeneous mobile environment, NKFP project
2004-2006	Greek-Hungarian TET project: Multimedia Transmission in Wireless Local Area Network Environment

2004-2006	ETIK: Coexistence and Interworking Issues of Heterogeneous Mobile Networks
2004-2006	ETIK: Radio Coexistence of Mobile Networks
2004-2006	ETIK: Charging and Billing in 3G/4G Mobile Networks
2004	CoDe-MM: Content-Based Delivery of MultiMedia, CREATENET Research Program
2004	NetMobS: Network-supported Mobility for the Student, CREATENET Research Program
2004	DINA: Dimensioning and Designing Wired and Wireless Access Networks, CREATENET Research Program
2004	ECONET Trilateral international research program on DistribMED Medium Access Control
2004	NEXWAY EU 5 <sup>th</sup> Framework project
2003-2007	PHOENIX EU 6 <sup>th</sup> Framework project
2003-2007	NEWCOM EU 6 <sup>th</sup> Framework project
2003-2007	AMBIENT EU 6 <sup>th</sup> Framework project
2003-2006	OTKA T 043375: "Research of mobility supporting technologies in mobil communication and computing"
2003-2005	OTKA TS 044733. "Application of new algorithms and coding procedures in mobile communications and computing"
2003-2006	COST 289: "Spectrum and Power Efficient Broadband Communications"
2003-2006	OTKA F042590: "Research on 4 <sup>rd</sup> Generation Mobile Systems"
2002-2003	QUIPROCONE (Quantum Information Processing & Communications..Network of Excellence) EU 5 <sup>th</sup> Framework Program, Associate member
2001-2004	ETIK: "Research on Wireless Infrastructure and Ad hoc LANs"
2001-2004	ETIK: "Research on IP Mobility Problems"
2001-2004	ETIK: "Research on 3 <sup>rd</sup> Generation Mobile Systems"
2001-2004	COST 279: "Analysis and Design of Advanced Multiservice Networks supporting Mobility, Multimedia, and Internetworking"
2000-2002	CAST EU 5 <sup>th</sup> Framework: "Configurable Radio with Advanced Software Technology"
2000-2002	OTKA F032268: "Research on 3 <sup>rd</sup> Generation Mobile Systems"
1999-2002	COST 262: "Spread Spectrum Systems and Techniques in Wireless and Wired Communications"
1999-2002	FKFP 303/99: "Investigation of Mobile Communication Systems"
1999-2002	OTKA T030651/99: "Investigation of Mobile Communication Systems"
1998-2001	ETIK: "Investigation of CDMA Systems"
1998-2001	ETIK: "Investigation of Wireless ATM Networks"
1998	FKFP 0388/97: "Investigation of Mobile Communication Systems"

- 1994-1998 COPERNICUS 579: "Research on ATM: Call Admission Control and Network Policing by Neural Networks and Performance Evaluation"
- 1994-1996 OTKA, F-014456: "Application of Efficient Neural Networks in Telecommunications"

## VISITS

- 1994 University of Leuven, Belgium. Topic: "Network Management Problems of ATM networks"
- 1995 University of Leuven, Belgium. Topic: "Network Management Problems of ATM networks"
- 1996 University of Leuven, Belgium. Topic: "Network Management Problems of ATM networks"

## STUDIES, COURSES and INDUSTRIAL CO-OPERATIONS

- 2015 Broadband measurements – WIFI discovery, NMHH
- 2015 QoS measurement in mobile networks, NMHH
- 2015 Development of RFID systems, Contitech
- 2013-2015 Development of Quantum key Distribution System
- 2013-2014 Mobile E-Government Applications, NISZ
- 2012 Country-wide WLAN coverage, GAMAX
- 2011 New Approaches of Real-World Virtualization using Micro Projector, Samsung
- 2010-2011 Platform Structure Specification, NavNGo
- 2010-2011 Positioning inside buildings, Controlsoft-RIK e
- 2010 Configurable SIP load sharing, Hungarian Telekom
- 2010 RFIDMOBP, Mobile Engine
- 2010 Jobcontrol application, TCT,
- 2010 Call-mix application, TCT
- 2010 3G Radio Access Network Dimensioning, Hungarian Telekom
- 2009-2011 IMS based new generation community mobile services, ITWARE, GOP 2008/2-1.3.1
- 2009 ALCATEL LTE course
- 2009 Effect of IMS QoS parameters on the quality of Multimedia Telephony Service, Hungarian Telekom
- 2009 Audit of telecommunication system of MVM Group central building
- 2009 3G Radio Access Network Dimensioning, Hungarian Telekom
- 2009 MESH WIFI, BIRD
- 2009 *Remote access of medical instrument*, BB Raun, 2009
- 2009 Development of Mobile Networks to Support User Experience, Nokia Siemens Networks, 2009



2009 Automatic testing of Fax and VoIP services, Hungarian Telekom PKI, 2009

2008 IMS system testing, Hungarian Telekom

2008 3G Radio Access Network Dimensioning, Hungarian Telekom

2008 NFC – Near Field Communication, Hungarian Telekom

2008 RFID based shopping cart

2008 IMS based fix-mobile convergence Hungarian Telekom

2008 Development of hosted multimedia Contact Center in IMS environment, TCT

2008 IMS based new generation multimedia community mobile services, ITWARE

2007 Investigation of IMS compatibility of various SIP equipment, AVAYA

2007 SIP clients behind NAT - TcT Hungary Kft., 2007

2007 3G Radio Access Network Dimensioning, T-COM (Mobile)

2007 IMS-based integrated messaging system, T-COM (PKI)

2007 Click-to-dial service in IMS-based environment, T-COM (PKI)

2007 Skype-SIP gateway, TcT Hungary Kft.

2007 Call information processing in TETRA, Pro M Zrt.

2006 3G Radio Access Network Dimensioning, T-COM (Mobile)

2006 Interactive Mobile Extension of Broadcasting System of ATV, T-COM (Mobile)

2006 Interactive Mobile Extension of Broadcasting System of TV2, T-COM (Mobile)

2006 Mobile Communication System for Public Transportation. BKV

2006 Comparison of ATCA Platforms, T-COM (Mobile)

2006 IMS-based Security Solutions, T-COM (Mobile)

2006 IMS Application Development Platform, T-COM PKI

2006 State of the Art Mobile Technologies training, ALCATEL

2005 WIMAX training, ALCATEL

2004 UMTS training, ALCATEL

2005 UMTS training, Vodafone

2005 2,5G Radio Access Network Dimensioning, T-COM (Mobile)

2004 WLAN training, ALCATEL

2004 Access Solutions in Next Generation Networks, Hungarian Telekom

2004 Mobile Banking Solutions, GIRO

2004 Measurement Techniques for RLAN Networks, National Telecommunications Agency

2004 UMTS-GSM/GPRS/EDGE Access Network Planning, T-Mobile

2004 EDR Systems, tender preparation, contractor: ERBE

2004 PKI Security Systems, Study, contractor: IKTA-E-GROUP

2004 GPRS training, contractor: National Telecommunications Agency

2004 UMTS training, contractor: ALCATEL

2004 UMTS training, contractor: SYSDATA

2003 Bluetooth training, contractor: Elcoteq

2002-2003 R&D on Peer-to-peer infocom sytem, Deutsche Telecom – T-Systems

2001 Translation of ETSI telecom standards, contractor: Hungarian Telecommunication Authority

2001 Preparing multimedia course: “Mobile Telecommunication Systems”, contractor: MATÁV PKI

2000-2001 GPRS Gateway Project, contractor: EADS - European Aeronautic Defence and Space Company

2000-2001 SIP Handover and IP Micro Mobility Project, contractor: EADS - European Aeronautic Defence and Space Company

2000 Comprehensive study of access networking technologies, contractor: Business Communication Networks Ltd.

2000 Comprehensive study of access networking technologies, contractor: Business Communication Networks Ltd.

2000 Comprehensive study of the future of mobile telecommunications, contractor: MATÁV PKI

2000 Study of GPRS System, contractor: PANTEL

2000 Teaching the course and writing lecture notes: “IP Mobility”, contractor: Westel

2000 Teaching the course and writing lecture notes: “GSM System”, contractor: Rohde&Schwarz

1999 Investigation of TETRAPOL field trial systems in Budapest, contractor: Ministry of Interior Affairs

1999 Comprehensive study of speech compression techniques in mobile telecommunications, contractor: NETI

1999 Translation of ETSI telecom standards, contractor: Hungarian Telecommunication Authority

1999 Examination and evaluation of the effects of GSM on aircraft landing system of Hungarian Air Force, contractor: Hungarian Telecommunication Authority

1999 Teaching the course and writing lecture notes: “TETRA System”, contractor: Antenna Hungária

1999 Investigation of TETRA field trial systems in Budapest, contractor: Antenna Hungária

1998 Comprehensive Study of the European and Hungarian Mobile Market, contractor: Westel 450

- 1997 Teaching the course and writing lecture notes: "Basics of Mobile Telecommunication Systems", contractor: Business Communication Networks Ltd
- 1997 Study of TETRA Networks, contractor: ENTEL
- 1994 Study of ATM Networks, contractor: MATÁV
- 1993 Study of ATM Networks, contractor: MATÁV

## **RESEARCH AREAS**

- Wideband radio technologies: DS-CDMA, MC/CDMA, OFDM, etc.
- IP mobility. routing, reliability, security
- Wireless LANs and their ad hoc extensions
- GSM-UMTS-LTE
- Software Defined Radio
- Smart metering
- RFID and near field communication
- Billing in packet-based mobile systems
- Mobile Agents
- Quantum Communications and Computing

Dr. Sándor Imre