

# Gábor Horváth Curriculum Vitae

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<b>Place, date of birth</b>	Érsekújvár, May 2, 1946
<b>Citizenship</b>	Hungarian
<b>Affiliation</b>	Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Measurement and Information Systems Budapest, Magyar tudósok krt. 2. 1117 Tel: (36)(1) 463-2677 Fax: (36)(1) 463-4112
<b>Position</b>	associate professor, head of department
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## Certificates, degrees

MSc in EE	1970
Budapest Technical University, Faculty of Electrical Engineering	
Candidate of technical sciences (the second top degree that can be obtained from the Hungarian Academy of Sciences by a thesis and examinations; its value approximately corresponds to a Ph.D. degree):	1988
Hungarian Academy of Sciences ("Quantization errors in FFT-based spectrum estimates")	
PhD (after the candidate degree)	1995
Budapest Technical University, Faculty of Electrical Engineering	

## Languages

English fluent

## Working places

Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Measurement and Information Systems (earlier: Department of Instrumentation and Measurement)

## Positions

Assistant lecturer	1970 - 1982
Lecturer	1982 - 1990
Associate professor	1990 -
Deputy Head of department	1990 - 2008
Head of department	from 2008 on

## Scientific prizes

National Prize (shared), 1985.  
Széchenyi Professor Scholarship (1997 - 2000)  
Széchenyi István Scholarship (2002-2005)  
Master Tutor Gold Medal, 2003.

## Areas of interest

Measurement theory, digital signal processing, intelligent information systems – theory and applications, learning systems, neural nets, hybrid intelligent systems.

## Professional activities, teaching, research

### **Curricula development and organization**

Integrated intelligent systems branch, BSc and MSc courses – in charge (2001-  
Intelligent systems sub branch – in charge (2001-2005)  
Embedded information systems branch – in charge (2001-2006)

### **Teaching**

Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Measurement and Information Systems - from 1970 on Curriculum development, lecturing, labs, supervising thesis and PhD work.

### **Subjects taught (last 10 years)**

<b>Subject</b>	<b>Data</b>	<b>Students/ semester</b>
Digital design	Lecturing, Technical Informatics Branch, undergraduate course, until 2000.	~ 400
Logic design	Lecturing, Faculty of Electrical Engineering and Informatics, graduate course, until 2008	~ 50
Knowledge based architectures	Lecturing, Faculty of Electrical Engineering and Informatics, graduate course, until 2001	~ 50
Hybrid information technologies	Lecturing, Faculty of Electrical Engineering and Informatics, graduate, until 2001	~ 50
Learning and neural systems	Lecturing, Technical Informatics branch, PhD course	4-10
Learning and hybrid information systems	Lecturing, Technical Informatics branch, graduate course	25-40
Neural networks	Lecturing, Faculty of Electrical Engineering and Informatics, graduate course	16-40
Cooperative and learning systems	Lecturing, undergraduate course, 2008	40
Neural networks	Lecturing, English language undergraduate course	1-10
Machine learning	MSc course	35
Student research lab	supervising	5-10
Thesis work	supervising	3-10

### **Teaching abroad**

- NIMIA, NATO Advanced Study Institute (NATO ASI) on Neural Networks for Instrumentation, Measurement, and Related Industrial Applications, lecturer, Crema, Italy, Oct 2001.
- LTP, NATO Advanced Study Institute (NATO ASI) on Learning Theory and Practice, Co-director and lecturer, Leuven, Belgium, July 2002.
- IMSCIA, International Master's degree program in Soft Computing for Industrial Applications: C7 Soft Computing for Identification 1-16, curriculum development, video-lecture design, Università Degli Studi Di Milano. 2003. <http://ewh.ieee.org/soc/im/imscia/>,

### **Research**

#### **National Research Grants**

- OTKA (T 7335) „Parallel distributed architectures with applications in real-time measurement and signal processing systems”, 1993-1995, project leader.
- OTKA (T 021003) "Nonlinear signal processing methods in measurement", 1996-1999, project leader
- OTKA (T 023868) „Active noise reducing means with applications in furnace utilities”, 1997-1999, participant
- OTKA (T 033058) "Hybrid intelligent methods in modeling" 2000-2003, participant
- OTKA (T 046771) “System modeling from measurement data, hybrid-neural approach” 2004-2007, project leader
- FKFP 0270/1999 "Hybrid methods in intelligent systems of high complexity", 1999-2001, project leader

### ***National R&D grants***

- HA-1 “Developing hematological automaton” (Medicor Works 1975), project leader.
- MOD-81 “Development of a modular medical data acquisition and signal processing system” (Medicor Works 1980-81), project leader.
- “MMT System - Modular Microprocessor Technology” (Medicor Works, 1976-1985) directing the development of the hardware systems.
- “Hybrid-neural modeling of LD converter steel production”. Feasibility analysis, OMFB, 1997-98.
- ALK-00216-98. “Hybrid-neural modeling of LD converter steel production”. System architecture and system design for Dunaferri Ltd. 1998-2001, project leader.
- IKTA 102/2001. "Image processing based medical decision support system", coordinator 2002-2004.
- GVOP-3.3.3 „Digital chest diagnostic screening center with purpose-oriented microPACS” (GVOP-3.3.3-05/2.2006-01-0108/3.0., Innomed Medical Zrt) 2006-2007, project leader.
- KMOP 2007-1.1.1 “Complex chest diagnostic decision support system”, (Innomed Medical Zrt), 2008-2011. project leader.

### ***International grants***

- TEMPUS SJEP 07759-94 "MODIFY - System Modeling, Fault diagnosis, Fuzzy logic" 1994-1997. participant
- TEMPUS SJEP “Introducing Parallel Processing into the Curriculum of the Hungarian Higher Educational Institutions of Technology”1995-1997, topic leader.
- COPERNICUS CIPA-CT94-0220 „Innovative Schwingungs- und Geräuschanalyse an Rotierenden Maschinen zum Zweck der Qualitätssicherung und Diagnose" 1995-1999, topic leader.
- Greek-Hungarian Bilateral Agreement Gr-32/96 „Transformed Domain Adaptive and Associative Signal Processing: Design and Implementation“ 1997-99, (University of Athens, Dept. of Informatics), participant.

- TEMPUS SJEP 12555-97 "INTCOM - Intelligent Systems in Measurement and Control" 1997-2000, INTCOM Hybrid -intelligent systems, participant.
- COPERNICUS IC 15-CT97-0714 "IQ2FD - Integrated Quantitative and Qualitative Fault Diagnosis" a "Development of new neural-network-based fault diagnosis scheme" 1997-2001. topic leader.
- British-Hungarian Bilateral Agreement TÉT GB-37/98 "Application oriented intelligent and knowledge based systems", 1999-2001, (University of Hull), participant.
- French-Hungarian Bilateral Agreement TéT, F-1/96 "Application of Nonlinear Signal processing Methods for Signal and System Modeling" (ENST Telecom Bretagne University, Brest, France) 1997-1998, project leader.
- Flemish-Hungarian Bilateral Agreement TÉT B-1/1999 "Modeling and Identification of Nonlinear Systems" TÉT B-1/1999, (Vrije Universiteit Brussel), 2000-2002, participant.
- Flemish-Hungarian Bilateral Agreement TÉT B-15/02 "Identification of Linear and Nonlinear Systems" TÉT B-15/02 (Vrije Universiteit Brussel), 2003-2004, participant.

## Publications

### Summary data

Publications total:137

Books, book chapters 9

English language journal papers 17

Hungarian language journal papers 20

Conference papers 68

Summary IF: 7.335

**10 most important publications from last 10 years** (full publication list with citations is available at <http://www.mycite.omikk.bme.hu/search/docres.php> ):

J. Valyon and G. Horváth, „Selection Methods for Extended Least Squares Support Vector Machines”, International Journal of Intelligent Computing and Cybernetics 1: (1) pp. 69-91. (2008)

G. Horváth, „Cerebellar Model Arithmetic Computer, In: Benjamin W Wah (szerk.), Encyclopedia of Computer Science and Engineering, Wiley, Hoboken, 2009. Vol. 1 pp. 381-393.

Valyon J. And Horváth G., „A Sparse Robust Model for a Linz-Donawitz Steel Converter”, IEEE Trans. on Instrumentation and Measurement, under , Accepted paper, to be published in 2009,

G. Horváth and T. Szabó, „Kernel CMAC with Improved Capability”, IEEE Transactions on Systems Man and Cybernetics Part B-Cybernetics 37:(1) pp. 124-138. (2007)

Altrichter M., Horváth G., Pataki B., Strausz Gy., Takács G., Valyon J., Horvath G (szerk.), „Neurális hálózatok” (Neural Nets), Budapest, Panem Kiado, 2006. 447.p.

P. Berényi, G. Horváth, V. Lampaert, and J. Swevers, „Non-Local Hysteresis Function Identification and Compensation with Neural Networks”, IEEE Transactions on Instrumentation and measurement 54:(6) pp. 2227-2238. (2005)

Horváth G., „CMAC Neural Network as an SVM with B-Spline Kernel Functions”, Proc. of the Instrumentation and Measurement Technology Conference, IMTC'2003 Vol 2. Vail, CO, May 20-22, 2003, pp. 1108-1113.

G Horvath: „Neural Networks in Systems Identification”. In: S Ablameyko, L Goras, M Gori, V Piuri (szerk.) Neural Networks in Measurement Systems. Amsterdam: IOS Press, 2003. pp. 43-78. (NATO ASI Series in Computer and Systems Sciences, Vol. 185)

G. Horvath, „Neural Networks in Measurement systems”, In: J A K Suykens, G Horváth, S Basu, C Micchelli, J Vandewalle (szerk.) Advances in Learning Theory: Methods, Models and Applications, Amsterdam: IOS Press, 2003. pp. 375-402. (NATO-ASI Series in Computer and Systems Sciences Vol. 190.)

Horvath G. and Szabo T., „CMAC Neural Network with Improved Generalization Property for System Modeling”, Proc. of the IEEE Instrumentation and Measurement Technology Conference, 2002. Anchorage, Alaska, USA, May 21-23, 2002, pp. 1603-1608.

**Scholarships:**

- 1 month scholarship, University of Karlsruhe, Germany, 1984.
- 2 months scholarship, University of Aalborg, Denmark, 1991.

**Membership in national organizations**

- Measurement and Automatic Society (Hungary) since 1975
- John von Neumann Computer Society (Hungary) since 2006

**Membership in international organizations**

- IEEE member since 1994  
senior member since 2003
- IFAC Hungarian National Board member

**Scientific organizing activities**

**Editorial board member**

- International Journal of Intelligent Computing and Cybernetics, IJICC (Emerald Publisher) since 2007
- Technical Committee on CMAC in IEEE Systems, Man, and Cybernetics Society since 2008.

**Regular reviewer for**

- IEEE Trans. on Automation Science and Engineering,
- IEEE Trans. on Systems, Man and Cybernetics, Part B,
- IEEE Trans. on Neural Networks,
- IEEE Trans. on Instrumentation and Measurement,
- IEEE Trans. on Industrial Electronics,
- International Journal of Intelligent Computing and Cybernetics,
- Automatica,
- Neurocomputing,
- Applied Intelligence,
- Nonlinear dynamics,
- Int. Journal of Neural Systems,
- Computational Statistics and Data Analysis,
- Int. Journal of Systems Sciences,
- Computers in Industry.

***Conference organization***

- Active'97 (Budapest, PC member, Proceedings editor)
- IMTC'2001 (Budapest, Program Chairman)
- WISP'03 (Budapest, Program Chairman)

***Reviewer for international conferences***

- IMTC' 03, 04, 05, 06
- IJCNN 04, 05, 06, 07, 08, 09.
- ICONS'03
- ICINCO'04
- WISP'03
- EMBEC'05
- and others