

Dr. Zsolt Kollár

Electrical engineer

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Professional CV

Personal data

Birth data **23.08.1983.**
Birth place **Budapest, Hungary.**
Nationality **Hungarian.**
Family status **Single.**

Studies

- 1998–2002 **Graduation**, *Piarist Gymnasium, Budapest, Budapest, Hungary, Rating: Excellent.*
- 2002–2008 **Diploma**, *Budapest University of Technology and Economics, Rating: Excellent.*
Faculty of Electric Engineering and Informatics
5 year course on electrical engineering – German course
DAAD scholarship: One semester at the Technical University of Karlsruhe
Major studies: Broadband and Mediacommunication
Side studies: Digital Signal Processing
- 2007–2008 **Diploma work**, *Technical University of Ilmenau, Ilmenau, Germany.*
Thesis: EXIT Chart Based Optimization of Turbo Receivers for Clipped Coded OFDM Signaling
Advisor: Dr. Reiner Thomä, Marcus Grossmann és Péter Horváth
Erasmus scholarship
- 2008–2011 **Phd course**, *Budapest University of Technology and Economics, Absolutorium.*
3 year PhD course in electrical engineering
Faculty of Electric Engineering and Informatics
Department of Measurement and Information Systems
Advisor: Dr. Gábor Péceli
- 2011–2012 **Phd candidate**, *Budapest University of Technology and Economics.*
1 year Phd candidate scholarship
Faculty of Electric Engineering and Informatics
Department of Measurement and Information Systems
- 2013 **Phd defence**, *Budapest University of Technology and Economics.*
Faculty of Electric Engineering and Informatics
Department of Measurement and Information Systems
Phd thesis: Investigation of Multicarrier Modulation Schemes in Cognitive Radio Applications

Professional experience

- 2005 **Trainee**, *LMS Internation*, Leuven, Belgium.
Car sound analysis in the frequency domain, Internship sponsored by Leonardo scholarship
- 2006 June **Summer school**, *University of Sannio*, Benevento, Italy.
Summer school on ADC & DAC Metrology
- 2008 **Student assistant**, *Technical University of Ilmenau*, Ilmenau, Germany.
Preparation of a student practicum: Digital Transmission using Orthogonal Frequency Division Multiplexing (OFDM)
- 2008-2009 **Research fellow**, *Technical University of Ilmenau*, Ilmenau, Germany.
Research work in the EASY-A project
- 2008- **Senior development and research engineer**, *Rohde & Schwarz Reference Laboratory*, Budapest, Hungary.
Numerous research and development projects
- 2010 June **Summer school**, *Vrije Universiteit Brussel*, Brussels, Belgium.
Identification of Nonlinear Dynamic Systems
- 2013- **Assistant lecturer**, *Department of Broadband Infocommunications and Electromagnetic Theory, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics*, Budapest, Hungary.

Project participation

- 2008-2009 EASY-A project
- 2010-2012 QoS MOS project, EU IST FP7
- 2012- TÁMOP – FIRST

Professional prizes, other honors

- 2005 Hungarian student conference II. prize: Zoltán Ádám Horváth, Zsolt Kollár, Máté Kovács: Analysis of car engine sound in frequency domain
- 2011 Hungarian utility patent: “Kapcsolási elrendezés rádiós kommunikációjú automata jelvezérlő eszköz megvalósítására”. (U1100050/10) - Krüpl Zsolt, Vágó Péter, Kollár Zsolt, Varga Lajos, Vécsi Sándor, Szombathy Csaba.
- 2012 Young Scientist Award for best young presenter at the Radioelektronika 2012 Conference: Zs. Kollár, J. Gazda, P. Horváth, D. Kocur, and L. Varga. Iterative compensation of baseband clipping in SMT transceivers. In *Radioelektronika 2012, Brno, Czech Republic*, pages 205–208, April 2012

Research topics

Digital signal processing in wireless communication networks, multicarrier modulation schemes (OFDM/FBMC), channel equalization, synchronization, error correction coding, cognitive radio

Language skills

Hungarian Mother tongue

English	Fluently speaking and writing (Cambridge First Certificate)
German	Fluently speaking and writing (Hungarian state exam)
French	Basic knowledge

Scientific society memberships

- IEEE member (ID number: 91208064)
- HTE member (ID number: 8741)

Lecturing activities

- MSc Diploma and BSc Thesis advisor: 6 MSc Diploma, 7 BSc Thesis
- Electric engineering and Informatics courses in BSc and MSc:
 - Signals and systems
 - Broadcasting systems
 - Digital signal processing in practice
 - Project laboratory, Diploma work and Thesis work consultation
- Electric engineering and Informatics courses in German language:
 - Grundlagen der programmierung I., II.
 - Signale und systeme
 - Kodierungstechnik
 - Elektronik
- Electric engineering and Informatics courses in English language:
 - Embedded and ambient systems
 - Project laboratory
 - Thesis work

Most important publications

Zs. Kollár, J. Gazda, P. Horváth, L. Varga, and D. Kocur. Iterative signal reconstruction of deliberately clipped SMT signals. *Science China – Information Sciences*, 56:1–17, 2013 – in press.

Zs. Kollár and P. Horváth. PAPR reduction of FBMC by clipping and its iterative compensation. *Journal of Computer Networks and Communications*, 2012:1–10, 2012

R. Datta, M. Gautier, V. Berg, Y. Futatsugi, M. Ariyoshi, M. Schühler, Zs. Kollár, P. Horváth, D. Noguét, and G. Fettweis. Flexible multicarrier PHY design for cognitive radio in white space. In *6th International ICST Conference on Cognitive Radio Oriented Wireless Networks: CrownCom 2011. Osaka, Japan, 2011*. paper 82

Independent citations

M. Senst and G. Ascheid. Optimal output back-off in OFDM systems with nonlinear power amplifiers. In *IEEE International Conference on Communications, ICC '09*, pages 4496–4501, June 2009

J.A. Lopez-Salcedo, E. Gutierrez, G. Seco-Granados, and A.L. Swindlehurst. Unified framework for the synchronization of flexible multicarrier communication signals. *IEEE Transactions on Signal Processing*, 61(4):828–842, 2013

Hivatkozások

Zs. Kollár, J. Gazda, P. Horváth, D. Kocur, and L. Varga. Iterative compensation of baseband clipping in SMT transceivers. In *Radioelektronika 2012, Brno, Czech Republic*, pages 205–208, April 2012.

Zs. Kollár, J. Gazda, P. Horváth, L. Varga, and D. Kocur. Iterative signal reconstruction of deliberately clipped SMT signals. *Science China – Information Sciences*, 56:1–17, 2013.

Zs. Kollár and P. Horváth. PAPR reduction of FBMC by clipping and its iterative compensation. *Journal of Computer Networks and Communications*, 2012:1–10, 2012.

R. Datta, M. Gautier, V. Berg, Y. Futatsugi, M. Ariyoshi, M. Schühler, Zs. Kollár, P. Horváth, D. Noguét, and G. Fettweis. Flexible multicarrier PHY design for cognitive radio in white space. In *6th International ICST Conference on Cognitive Radio Oriented Wireless Networks: CrownCom 2011. Osaka, Japan, 2011*. paper 82.

M. Senst and G. Ascheid. Optimal output back-off in OFDM systems with nonlinear power amplifiers. In *IEEE International Conference on Communications, ICC '09*, pages 4496–4501, June 2009.

J.A. Lopez-Salcedo, E. Gutierrez, G. Seco-Granados, and A.L. Swindlehurst. Unified framework for the synchronization of flexible multicarrier communication signals. *IEEE Transactions on Signal Processing*, 61(4):828–842, 2013.

V. Berg, Zs. Kollár, R. Datta, P. Horváth, D. Noguét, and G. Fettweis. Low ACLR communication systems for TVWS operation. In *Future Network & Mobile Summit 2012. Berlin, Germany, June 2012*. paper 146.

R. Datta, G. Fettweis, Zs. Kollár, and P. Horváth. FBMC and GFDM interference cancellation schemes for flexible digital radio PHY design. In *14th Euromicro Conference on Digital System Design (DSD), Oulu, Finland, 2011*. paper 274.

B. Horváth and Zs. Kollár. Továbbfejlesztett csúcstényező - csökkentési eljárások FBMC rendszerekben. In *Mesterpróba 2013, Budapest, Magyarország, June 2013*.

Zs. Kollár, J. Bitó, P. Bakki, L. Csurgai-Horváth, P. Horváth, and B. Horváth. QoS MOS FP7 ICT projekt - kognitív rádiós rendszerek analóg TV sávokban. In *HTE INFOKOM 2012, Mátraháza, Hungary, October 2012*.

Zs. Kollár, J. Bitó, L. Varga, and P. Horváth. Novel multicarrier modulation for cognitive radio systems. In *IEICE TCSR, Fukuoka, Japan, IEICE Tech. Rep*, volume 112, pages 67–71, October 2012. paper SR2012-47.

Zs. Kollár, M. Grossmann, and R. Thomä. Convergence analysis of BNC turbo detection for clipped OFDM signalling. In *13th International OFDM-Workshop 2008, InOWo'08, Hamburg, Germany, pages 241–245, August 2008*.

- Zs. Kollár and P. Horváth. Equalization of multicarrier cognitive radio transmissions over multipath channels with large delay spread. *Infocommunication Journal*, 3(2):42–47, 2011.
- Zs. Kollár and P. Horváth. Physical layer considerations for cognitive radio: Modulation techniques. In *IEEE 73rd Vehicular Technology Conference: VTC2011-Spring, Budapest, Hungary*, March 2011. paper 97-57537.
- Zs. Kollár and P. Horváth. Physical layer considerations for cognitive radio: Synchronization point of view. In *IEEE 73rd Vehicular Technology Conference: VTC2011-Spring, Budapest, Hungary*, March 2011. paper 97-74244.
- Zs. Kollár and P. Horváth. Modulation schemes for cognitive radio in white spaces. *Radioengineering*, 19(4):511–517, December 2010.
- Zs. Kollár, G. Péceli, and P. Horváth. Iterative decision feedback equalization for FBMC systems. In *Proceedings of IEEE First International Conference on Advances in Cognitive Radio, COCORA 2011, Budapest, Hungary*, April 2011. paper 60056.
- Zs. Kollár, L. Varga, and K. Czimer. Clipping-based iterative PAPR-reduction techniques for FBMC. In *OFDM-Workshop 2012, InOWo'12*, pages 139–145, August 2012. paper OFDM12-10.
- Zs. Kollár. Iterative decision feedback equalization for FBMC systems. In *Proceedings of the 18th PhD Minisymposium. Budapest, Hungary*, pages 50–53, February 2011.
- Zs. Kollár. Receiver synchronization for 2-FSK communication systems. In *Proceedings of the 17th PhD Minisymposium. Budapest, Hungary*, pages 12–15, February 2010.
- Zs. Kollár. 60 GHz band: OFDM or single carrier transmission. In *Proceedings of the 18th PhD Minisymposium. Budapest, Hungary*, pages 54–55, February 2009.
- Zs. Kollár, L. Varga, and P. Horváth. Modern többvívós rendszerek kognitív rádiós alkalmazásokban. *Híradástechnika*, 56(3):18–22, 2011.
- M. Schühler, A. Jaschke, and A. Popugaev. Reconfigurable RF receiver front-end for cognitive radio. In *Microelectronic Systems: Circuits, Systems and Applications*, pages 75–84, June 2011.
- L. Varga, Zs. Kollár, and P. Horváth. Recursive discrete fourier transform based SMT receivers for cognitive radio applications. In *19th International Conference on Systems, Signals and Image Processing, IWSSIP 2012. Wien, Austria*, pages 130–133, April 2012. paper 1569531429.
- L. Varga and Zs. Kollár. Low complexity FBMC transceiver for FPGA implementation. In *Radioelektronika 2013, Pardubice, Czech Republic*, pages 219–223, April 2013.
- K. Janssens, Zs. Kollár, B. Peeters, S. Pauwels, and H. Van der Auweraer. Order-based resonance identification using operational PolyMAX. In *24th International*

Modal Analysis Conference (IMAC XXIV), Society for Experimental Mechanics Inc. (SEM). Saint Louis, USA, January 2006.

K. Janssens, Zs. Kollár, and L. Gielen H. Van der Auweraer P. Van de Ponsele, A. Vecchio. Automatic identification of noise annoyance features from engine run-up sounds. In *ISCV13 - Thirteenth International Congress on Sound and Vibration. Wien, Austria, 2006.*

S. Verma, G. Choudhary, and P. Yarde. Assorted facets of physical layer in cognitive radio: A review. *International Journal of Computer Applications*, 51(22):26–37, August 2012.

E. Kofidis, D. Katselis, A. Rontogiannis, and S. Theodoridis. Preamble-based channel estimation in OFDM/OQAM systems: A review. *Signal Processing*, 93(7):2038 – 2054, 2013.

A. Sahin, I. Güvenç, and H. Arslan. A survey on prototype filter design for filter bank based multicarrier communications. *CoRR*, abs/1212.3374, 2012.

M. Schmidt, A. Atzrodt, C.R. Sabirin, G. de Rue, and Melz T. Comparative operational modal analysis: Application of a semi active vibration absorber to a manufacturing machine. In *4th International Operational Modal Analysis Conference IOMAC 2011, Istanbul, Turkey, May 2011.*

S.-X. Bu, S.-T. Tan, P. Min, Z.-M. Gao, and A.-Y. Jiao. Tests for a certain tractor's resonance problem. *Journal of vibration and shock*, 32(4):102–105, 2013.

G. Wu, S. Hu, H. Chen, and S.-Q. Li. Parallel interference cancellation based signal detection for OFDM/OQAM systems. *Journal of Electronics & Information Technology*, 35(1):178–184, 2013.

L. Csurgai-Horváth, J. Bitó, J. Kertész, Kollár Zs., and I. Rieger. Kognitív rádiózás a frekvenciasávok hatékony kihasználásában (1. rész). *Elektronet*, 22(3):30–32, 2013.

L. Csurgai-Horváth, J. Bitó, J. Kertész, Kollár Zs., and I. Rieger. Kognitív rádiózás a frekvenciasávok hatékony kihasználásában (2. rész). *Elektronet*, 22(4):27–29, 2013.