

János Botzheim

Place and date of birth:

Budapest, 20th May 1978

Degrees earned:

M.Sc. in Technical Informatics 2001

Ph.D. in Computer Science 2008

Both at the Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics (BME), Budapest, Hungary

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Position:

– associate professor, Budapest University of Technology and Economics, Department of Mechatronics, Optics and Mechanical Engineering Informatics (since February 2018)

Previous Positions:

– Associate Professor in the Graduate School of System Design at the Tokyo Metropolitan University, 6-6 Asahigaoka, Hino, Tokyo, 191-0065 Japan (April 2012 - March 2017)

– Associate Professor in the Department of Automation at the Széchenyi István University, Hungary (2009 October – January 2018, on leave in Japan from 2012 to 2017)

– Assistant Professor in the Department of Automation at the Széchenyi István University, Hungary (October 2008 – September 2009)

– Lecturer in the Department of Automation at the Széchenyi István University, Hungary (October 2007 – September 2008)

Visits:

– Tokyo Metropolitan University (from September 2010 to March 2011, from September 2011 to February 2012)

– The Australian National University, Canberra (8 months, 2005-2006)

– Johannes Kepler University, Linz, Austria (4 months in 2005, 2 months in 2004, 4 months in 2003)

– Institute of Computer Science, Prague, Czech Republic (2004, 1 week)

– Department of Mathematics and Descriptive Geometry, Slovak University of Technology, Bratislava (2004, 1 week)

– Cracow University of Technology, Poland (2003, 1 month)

– Czech Technical University Prague, Czech Republic (2002, 1 month)

Teaching experience:

- Intelligent systems and Fuzzy systems at Széchenyi István University (in Hungarian)
- Fuzzy systems I and Fuzzy systems II at Budapest University of Technology and Economics (in Hungarian)
- Introduction to Robotics at Tokyo Metropolitan University (in English)
- Fuzzy Systems and Computational Intelligence (ATHENS BME 3) lectures in English for foreign students at Budapest University of Technology and Economics

Participation in projects:

- Participation in the Bilateral Hungarian-Portugal cooperation project
 - Automatic design of neural and fuzzy models, P-14/01 (2002-2003)
 - Complexity analysis and reduction of fuzzy and neural network systems, P-21/03 (2004-2005)
 - Model identification, Port-8/05 (2006-2007)
- Participation in the Bilateral Hungarian-Czech cooperation project
 - Complexity analysis and reduction of fuzzy and neural network systems, CZ-1/2003 (2004-2005)
 - Complexity analysis of fuzzy and kernel function models, CZ-5/05 (2005-2006)
- National Office for Research and Technology (NKFP) NKFP-2/0015/2002 project, Application of artificial intelligence in telecommunication supervision systems by fuzzy decision making algorithms (2002-2005)
- Hungarian Scientific Research Fund (OTKA)
 - T034233 project, Fuzzy control and inference algorithms (2001-2004)
 - T048832 project, Analysis and identification of fuzzy systems and models (2005-2008)
 - a K75711 project, Computational intelligent algorithms, systems, and models (2009-2012)
- ENERGOPT project (BAROSS-ND07-INRG5-07-2008-0059): Development of an expert system for applications in building energetics (2010-2011)
- Regional Innovation Strategy Support Program: Greater Tokyo Smart Quality of Life Technology Development Region (2012-2016)
 - Development of a smart-phone based human-friendly robot partner
 - Realizing human-like behavior and intelligence for the robot partner based on computational intelligence and related techniques such as image processing, natural language processing, and machine learning
 - Developing computational intelligence based algorithms for robot locomotion, path planning and related tasks

- Realizing the concept of informationally structured space for using robot partners and sensors in smart environment

Languages:

- Hungarian (native)
- English (fluent)
- German (fluent)
- Japanese (intermediate)

Awards:

- Publication award from Széchenyi István University for the paper: J. Botzheim, C. Cabrita, L. T. Kóczy, and A. E. Ruano. Fuzzy rule extraction by bacterial memetic algorithms. *International Journal of Intelligent Systems*, Vol. 24, No. 3, March 2009, pp. 312–339.
- Excellent paper award for the paper: J. Botzheim, P. Földesi. Parametric representation of fuzzy power function for decision-making processes. In *Proceedings of the 7th International Symposium on Management Engineering, ISME 2010, Kitakyushu, Japan, 26-28 August, 2010*. pp. 248–255.
- Best paper award for the paper: J. Botzheim. A Novel Diversity Induction Method for Bacterial Memetic Algorithm by Hibernation of Individuals. In *Proceedings of the 6th International Conference on Genetic and Evolutionary Computing, ICGEC 2012, Kitakyushu, Japan, 25-28 August, 2012*. pp. 328-331.
- Best paper award for the paper: J. Botzheim, B. Yusuf, N. Kubota, T. Yamaguchi. Computational Intelligence for Gestural Communication using Emotional Model. In *Proceedings of the 3rd International Workshop on Advanced Computational Intelligence and Intelligent Informatics, IWACIII 2013, Shanghai, China, 18-21 October, 2013*.

Research interests:

- computational intelligence, fuzzy systems, evolutionary algorithms, neural networks, bacterial algorithms, memetic algorithms
- automatic model identification
- computational intelligence applications in robotics, cognitive robotics

Membership in Scientific Societies:

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Computational Intelligence Society (IEEE CIS)
- IEEE Robotics and Automation Society (IEEE RAS)
- IEEE Systems, Man, and Cybernetics Society (IEEE SMC)
- IEEE Computer Society (IEEE SMC)
- IEEE Internet of Things Community
- IEEE Life Sciences Community

- IEEE Big Data Community
- IEEE Brain Community
- IEEE Digital Senses Community
- IEEE CIS Intelligent Systems Applications TC Robotics Task Force Vice Chair
- IEEE SMC Computational Cybernetics Technical Committee member
- Hungarian Academy of Engineering
- John von Neumann Computer Science Society
- Hungarian Fuzzy Association

The 10 most important papers:

1. N. N. W. Tay, J. Botzheim, N. Kubota. Human-Centric Automation and Optimization for Smart Homes. IEEE Transactions on Automation Science and Engineering. Accepted. IF (2016)=3.502
2. A. A. Saputra, Y. Toda, J. Botzheim, N. Kubota. Neuro-activity Based Dynamic Path Planner for 3-D Rough Terrain. IEEE Transactions on Cognitive and Developmental Systems. Accepted.
3. J. Woo, J. Botzheim, N. Kubota. Emotional Empathy Model For Robot Partners Using Recurrent Spiking Neural Network Model With Hebbian-LMS Learning. Malaysian Journal of Computer Science, Vol. 30, No. 4, pp. 258–285, 2017. IF (2016)=0.6
4. A. A. Saputra, J. Botzheim, I. A. Sulistijono, and N. Kubota. Biologically inspired control system for 3-D locomotion of a humanoid biped robot. IEEE Transactions on Systems, Man, and Cybernetics: Systems, Vol. 46, No. 7, pp. 898–911, 2016. IF=2.35
5. N. N. W. Tay, J. Botzheim, N. Kubota. Joint probabilistic approach for real-time face recognition with transfer learning. Robotics and Autonomous Systems, Vol. 75, pp. 409–421, 2016. IF=1.95
6. D. Tang, B. Yusuf, J. Botzheim, N. Kubota, C. S. Chan, A novel multimodal communication framework using robot partner for aging population. Expert Systems with Applications, Vol. 42, pp. 4540-4555, 2015. IF= 2.981
7. D. Tang, J. Botzheim, N. Kubota. Supervised learning based multimodal perception for robot partners using smart phones. Acta Polytechnica Hungarica, Vol. 11, No. 8, pp. 139–159, 2014. IF=0.649
8. J. Botzheim, P. Földesi. Novel calculation of fuzzy exponent in the sigmoid functions for fuzzy neural networks. Neurocomputing, Vol. 129, pp. 458–466, 2014. IF=2.083
9. J. Botzheim, C. Cabrita, L. T. Kóczy, A. E. Ruano. Fuzzy rule extraction by bacterial memetic algorithms. International Journal of Intelligent Systems, Vol. 24, No. 3, pp. 312–339, 2009. IF=1.194

10. J. Botzheim, B. Hámori, L. T. Kóczy. Extracting trapezoidal membership functions of a fuzzy rule system by bacterial algorithm. In B. Reusch (Ed.), Computational Intelligence, Theory and Applications, Lecture Notes in Computer Science, Vol. 2206, Springer-Verlag, Berlin-Heidelberg, pp. 218–227, 2001. IF=0.415

The full list of papers can be found here:

https://vm.mtmt.hu/search/slist.php?nwi=1&inited=1&ty_on=1&url_on=1&cite_type=2&orderby=3D1a&location=mtmt&stn=1&AuthorID=10040656&Scientific=1

Scientometrics:

- total impact factor: 17.137
- number of known independent citations: 380
- h-index (based only on independent citations): 10

Invited talk:

Computational Intelligence for Community-centric Robot Partners
3rd International Workshop on Advanced Computational Intelligence and Intelligent Informatics, IWACIII 2013, Shanghai, China, 18-21 October, 2013

Keynote speech:

Cognitive Robotics for Community-Centric Systems
Third International Conference on Computing Measurement Control and Sensor Network, CMCSN 2016, Matsue, Japan, 20-22 May, 2016

Invited seminar lectures

- Bacterial algorithms and fuzzy systems
Czech Technical University, CMP laboratory, Prague, June 2002
- Model identification by bacterial optimization
Academy of Sciences of the Czech Republic, Institute of Computer Science, Prague, November 2004
- A bacterial evolutionary algorithm for feature selection
Johannes Kepler University (FLLL/SCCH Master and PhD Seminar), Linz, Ausztria, June 2005 (together with M. Drobnics)
- Fuzzy sets and fuzzy systems
The Australian National University, Department of Computer Science, Canberra, Australia, November 2005
- Evolutionary algorithms. Introduction and recent results.

The Australian National University, Department of Computer Science, Canberra, Australia, March 2006

– Bacterial memetic algorithm for fuzzy rule base extraction
Academy of Sciences of the Czech Republic, Institute of Computer Science, Prague, November 2007

– Bacterial memetic algorithms. Introduction and applications.
Johannes Kepler University, Fuzzy Logic Laboratory, Linz, Austria, December, 2009

– Bacterial memetic algorithm and its applications
Tokyo Metropolitan University, Japan, September, 2010

– Bacterial memetic algorithm and its applications
University of Malaya, Malaysia, July, 2013

– Smart phone based human friendly robot partners
University of Malaya, Malaysia, July, 2013

– Computational Intelligence – Introduction and Applications
Toin University of Yokohama, Japan, December, 2013

– Development of the Cognitive Model of a Community-Centric Robot Partner, Seminars on Robotics and Mechatronics for Community-Centric Systems at the Tokyo Metropolitan University, December, 2014

– From Human-Centric Systems to Community-Centric Systems, Seminars at Research Center for Community Centric Systems at the Tokyo Metropolitan University, May, 2015

– Computational Intelligence for Cognitive Robotics
SerBOTinQ Seminar at the Tokyo Metropolitan University, February, 2017

Participation in International Scientific Events:

Organizing Committee Member of International Conferences

1. Technical Program Co-Chair of the IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2004, Budapest, Hungary, 25-29 July, 2004
2. Special Session Chair of the 2nd International Workshop on Advanced Computational Intelligence and Intelligent Informatics, IWACIII 2011, Suzhou, China, 19-23 November, 2011
3. Special Session Chair of the 3rd International Workshop on Advanced Computational Intelligence and Intelligent Informatics, IWACIII 2013, Shanghai, China, 18-21 October, 2013

4. Symposium Co-Chair of the IEEE Symposium on Robotic Intelligence in Informationally Structured Space, RiiSS 2014, Orlando, Florida, USA, 9-12 December, 2014
5. Symposium Co-Chair of the IEEE Symposium on Robotic Intelligence in Informationally Structured Space, RiiSS 2015, Cape Town, South Africa, USA, 7-10 December, 2015
6. Program Co-Chair of the 9th International Conference on Intelligent Robotics and Applications, ICIRA 2016, Hachioji, Tokyo, Japan, 22-24 August, 2016
7. Symposium Co-Chair of the IEEE Symposium on Robotic Intelligence in Informationally Structured Space, RiiSS 2016, Athens, Greece, 6-9 December, 2016
8. Symposium Co-Chair: IEEE Symposium on Robotic Intelligence in Informationally Structured Space, RiiSS 2017, Honolulu, Hawaii, USA, Nov. 27 - Dec. 1, 2017

Member of International Program Committee

1. World Automation Congress, WAC 2006, 6th International Symposium on Soft Computing for Industry, ISSCI 2006, Budapest, Hungary, 24-26 July, 2006
2. IEEE Workshop on Robotic Intelligence in Informationally Structured Space, IEEE RiiSS 2011, IEEE Symposium Series on Computational Intelligence, IEEE SSCI 2011, Paris, France, 11-15 April, 2011
3. 3rd International Conference on Intelligent Decision Technologies, KES-IDT 2011, Piraeus, Greece, 20-22 July, 2011
4. 3rd International Neural Network Society Winter Conference 2012, INNS-WC 2012, Bangkok, Thailand, 3-5 October 2012
5. IEEE Workshop on Robotic Intelligence in Informationally Structured Space, IEEE RiiSS 2013, IEEE Symposium Series on Computational Intelligence, IEEE SSCI 2013, Singapore, 16-19 April, 2013
6. IEEE Workshop on Memetic Computing, MC 2013, IEEE Symposium Series on Computational Intelligence, IEEE SSCI 2013, Singapore, 16-19 April, 2013
7. 5rd International Conference on Intelligent Decision Technologies, KES-IDT 2013, Sesimbra, Portugal, 26-28 June, 2013
8. 5th World Congress on Nature and Biologically Inspired Computing, NaBIC 2013, Fargo, North Dakota, USA, 12-14 August, 2013

9. 17th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, KES 2013, Kitakyushu, Japan, 9-11 September, 2013
10. IEEE International Conference on Systems, Man, and Cybernetics, IEEE SMC 2013, Manchester, UK, 13-16 October, 2013
11. 3rd World Congress on Information and Communication Technologies, WICT 2013, Hanoi, Vietnam, 15-18 December, 2013
12. 6th International Conference on Intelligent Decision Technologies, KES IDT 2014, Chania, Greece, 18-20 June 2014
13. Fifth World Congress on Nature and Biologically Inspired Computing, NaBIC 2014, Porto, Portugal, 30 July-1 August, 2014
14. 6th International Conference on Computational Aspects of Social Networks, CASoN 2014, Porto, Portugal, 30 July-1 August, 2014
15. 6th International Conference on Soft Computing and pattern recognition, SoCPaR 2014, Tunis, Tunisia, 11-14 August, 2014
16. 18th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, KES 2014, Gdynia, Poland, 15-17 September, 2014
17. 14th International Conference on Intelligent Systems Design and Applications, ISDA 2014, Okinawa, Japan, 27-29 November, 2014
18. International Conference on Information and Communication Technologies, ICICT 2014, Kochi, India, 3-5 December, 2014
19. 7th International KES Conference on Intelligent Decision Technologies, KES IDT 2015, Hilton Sorrento Palace, Italy, 17-19 June 2015
20. International Conference on Control, Electronics, Renewable Energy, and Communications 2015, ICCEREC 2015, Bandung, Indonesia, 27-29 August, 2015
21. 19th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, KES 2015, Singapore, 7-9 September, 2015
22. 36th International Conference on Information Systems Architecture and Technology, Karpacz, Poland, 20-22 September, 2015
23. 7th International Conference of Soft Computing and Pattern Recognition, SoCPaR 2015, Fukuoka, Japan, 13-15 November 2015

24. 7th World Congress on Nature and Biologically Inspired Computing, NaBIC 2015, Pietermaritzburg, South Africa, 1-3 December, 2015

25. 7th International Conference on Computational Aspects of Social Networks, CASoN 2015, Pietermaritzburg, South Africa, 1-3 December, 2015

26. 6th International Conference on Innovations in Bio-Inspired Computing and Applications, IBICA 2015, Kochi, India, 16-18 December, 2015

Organizing Special Sessions

1. IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2004, Budapest, Hungary, 25-29 July, 2004

Title of the Session: Fuzzy Modeling (with Laszlo T. Koczy)

2. World Automation Congress, WAC 2006, 6th International Symposium on Soft Computing for Industry, ISSCI 2006, Budapest, Hungary, 24-26 July, 2006

Title of the Session: Fuzzy Modeling (with Laszlo T. Koczy)

3. 3rd International Conference on Intelligent Decision Technologies, KES-IDT 2011, Piraeus, Greece, 20-22 July, 2011

Title of the Session: Interpretation of loss aversion in soft computing (with Peter Foldesi)

4. 4th International Conference on Intelligent Decision Technologies, KES-IDT 2012, Gifu, Japan, 23-25 May, 2012

Title of the Session: Computational Intelligence in Management Controlling (with Peter Foldesi)

5. 23rd International Symposium on Micro-NanoMechatronics and Human Science, MHS 2012, Nagoya, Japan, 4-7 November, 2012

Title of the Session: Cognitive Robotics (with Naoyuki Kubota)

6. 31st Annual Conference of the Robotics Society of Japan, Tokyo, Japan, 4-6 September, 2013

Title of the Session: Applications of Computational Intelligence in Robotics

7. 17th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems, KES 2013, Kitakyushu, Japan, 9-11 September, 2013

Title of the Session: Cognitive biases in human-machine communication (with Peter Foldesi)

8. 24th International Symposium on Micro-NanoMechatronics and Human Science, MHS 2013, Nagoya, Japan, 10-13 November, 2013

Title of the Session: Computational Intelligence for Cognitive Robotics (with Naoyuki Kubota)

9. 2nd International Conference on Robot, Vision and Signal Processing, RVSP 2013, Kitakyushu, Japan, 10-12 December, 2013

Title of the Session: New Era for the Combination of Neural and Fuzzy Systems (with Kazuyuki Murase)

10. World Automation Congress, WAC 2014, Kona, Hawaii, USA, 3-7 August, 2014

Title of the Session: Intelligent Image Processing for Robot Perception (with Hiroyuki Masuta and Naoyuki Kubota)

11. The 21st International Conference on Neural Information Processing, ICONIP 2014, Kuching, Malaysia, 3-6 November, 2014

Title of the Session: Cognitive Robotics (with Chu Kiong Loo and Naoyuki Kubota)

12. 25th International Symposium on Micro-NanoMechatronics and Human Science, MHS 2014, Nagoya, Japan, 9-12 November, 2014

Title of the Session: Community-Centric Robotics (with Naoyuki Kubota)

13. 10th France - Japan Congress and 8th Europe - Asia Congress on Mechatronics, Tokyo, Japan, 27-30 November, 2014

Title of the Session: Cognitive Robotics (with Honghai Liu and Chu Kiong Loo)

14. 2015 IEEE Congress on Evolutionary Computation, Sendai, Japan, 25-28 May, 2015

Title of the Session: Evolutionary Computation for Cognitive Robotics (with Chu Kiong Loo and Naoyuki Kubota)

15. 24th IEEE International Symposium on Robot and Human Interactive Communication, Kobe, Japan, Aug 31-Sept 4, 2015

Title of the Session: Cognitive Robotics (with Honghai Liu and Chu Kiong Loo)

Reviewer of International Journals

IEEE Transactions on Neural Networks / IEEE Transactions on Neural Networks and Learning Systems

IEEE Transactions on Fuzzy Systems

IEEE Transactions on Systems, Man, and Cybernetics - Part C: Applications and Reviews

IEEE Transactions on Industrial Electronics

IEEE Transactions on Instrumentation and Measurement

Robotics and Autonomous Systems

Autonomous Robots

Journal of Advanced Computational Intelligence and Intelligent Informatics

Memetic Computing

Applied Soft Computing

Neurocomputing

Soft Computing

Soft Computing and Automation

Information Sciences
Advances in Artificial Neural Systems
Neural Computing and Applications
Computational Intelligence and Neuroscience
Integrated Computer-Aided Engineering
International Journal of Artificial Intelligence
Journal of Engineering and Computer Innovations
Sensors
OPSEARCH
Acta Technica Jaurinensis
Acta Polytechnica Hungarica
Acta Electrotechnica et Informatica
Computing and Informatics
Infocommunications Journal
SICE Journal of Control, Measurement, and System Integration
International Journal of Robotics and Automation Technology
Multidiscipline Modeling in Materials and Structures
Ain Shams Engineering Journal
Arabian Journal for Science and Engineering

Editorial Board Member of International Journals

Heliyon
International Journal of Distributed Sensor Networks
International Journal of Robotics and Automation Technology
Oriental Journal of Computer Science and Technology
Journal of Network Intelligence

Reviewer of International Conferences

More than 100 conferences. The full list can be found here:

<https://publons.com/author/492876/janos-botzheim#profile>