

Plenary Speakers

Plenary Speech Title will be appeared soon.



Dr, Jeffrey Johnson is Professor of Complexity Science and Design. I joined the Open University in 1980 after three years as Senior Research Associate in the Geography Department of Cambridge University, and six years as Research Fellow in the Mathematics Department of Essex University.

jeff.johnson@open.ac.uk

CV: Professor of Complexity Science and Design, Open University, 2002, President of Complex Systems Society 2007-2011, Head of Department, DDEM, 2007 – 2010

Vice-President, Complex Systems Society, 2005 - 2007

British Council Monbusho Professor in Eletrical Engineering, Oita Univeristy, 2000 & 2002

Senior Research Fellow in Design & Innovation, Open University, 1980-2002

Senior Research Associate in Geography, Cambridge University, 1977 - 1980

Research Fellow in Mathematics, Essex University, 1971-77

Managing Director, Vision Scientific Ltd, 1989-

PhD (Mathematics), Essex University, 1976.

Chartered Engineer (Fellow of the British Computer society)

Chartered Mathematician (Fellow of the Institute of Mathematics & its Applications)

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- [Publications](#)

Current Projects

Partner in EU FET research project TOPDRIM: Topology Driven Methods in Complex Systems

Lead Partner in étoile. EU FET Coordination Action "Enhanced Technologies for Open Intelligent Learning Environments".

Partner in EU FET Coordination action NESS: Non-Equilibrium Social Science

Recent Projects

Partner in EU FET Coordination action GSDP: Global Systems Dynamics and Policy

Lead Partner in €900,000 [ASSYST](#) EU Coordination Action 2009-2012 <http://assyst.open.ac.uk>

"Action for the Science of complex SYstems for Socially intelligent icT"

['Embracing Complexity in Design'. An AHRB/EPSRC Designing for the 21st Century Cluster 2006-2008.](#)

[EPSRC taught course on "Mathematics for the science of complex systems", Warwick University, 2005 - 2007](#)

[http://phoenix.open.ac.uk/complexity/EPSRC Maths course.html](http://phoenix.open.ac.uk/complexity/EPSRC_Maths_course.html)

[IMA Conference on "Mathematics in the science of complex systems", 18-21 Sept 2006, Warwick University. 2007 Conference planned for Venice,](#)

<http://www.ima.org.uk/Conferences/Mathsinthescienceofcomplexsystems.htm>

[Lead Partner in the Euro 1 million 'Open Network of Centres of Excellence in Complex Systems', ONCE-CS, EU coordination action 2005-2007, http://www.once-cs.net](#)

[GIACS - General Industrial Applications of Complex Systems, WP12 European Complex Systems Society](#)

Links

<http://www.robofesta-europe.org>

<http://robots.open.ac.uk>

<http://www.robocup.org>

<http://agents.sci.brooklyn.cuny.edu/dev/rcj>

<http://www.complexityanddesign.net/>

<http://assyst.open.ac.uk>

Selected Publications

Johnson, J. H., [The Future of the Social Sciences and Humanities in the Science of Complex Systems!](#) The European Journal of Social Science Research. Nov. 2010.

Johnson, J. H., The Future of the Social Sciences and Humanities in the Science of Complex Systems! The European Journal of Social Science Research. Nov. 2010.

Alexiou, K., Johnson, J. H., Zamenopoulos, T., ['Embracing Design in Complexity'](#), in Embracing Complexity in Design, (Eds), Routledge, 2010.

Alexiou, K., Johnson, J., Zamenopoulos, T., Embracing Complexity in Design, Routledge, 2010.

Johnson, J. H., 'Hypernetworks for complex systems', Environment & Planning B, Planning and Design, (in press), 2010.

Sam, G., Zamenopoulos, T., Alexiou, K., Johnson, J. H., 'Involvement of right dorsolateral prefrontal cortex in ill-structured design cognition: An fMRI study', *Brain Research*, BRES-D-09-01201R1, 2009.

Alexiou, K., Zamenopoulos, T., Johnson, J. H., Gilbert, S., 'Exploring the neurological basis of design cognition using brain imaging: some preliminary results', *Design Studies*, **30** (2009) 623-647.

J.H.Johnson, Science and policy in designing complex futures', *Journal of Futures*, 40, 520-536, (2008)

Johnson, J.H., Serras, J., 'The Multilevel Dynamics of Very Large Complex Road Systems, European Conference on Complex Systems, ECCS' 08, Jerusalem, 14-19 September 2008.

Scott, N. A., Frizelle, G., Johnson, J.H., 'Insights into lean manufacturing from complex systems measures', *International Journal of Agile Manufacturing*, 10(2), 125-128, 2007.

Robertson, A., Lycouris, S., Johnson, J. H., 'An approach to the design of interactive environments with reference to choreography, architecture, the complex systems of 4D

design.', *International Journal of Performance Arts and Digital Media*, 3 (2 and 3), 281-294, 2007.

Johnson, J. H., Iravani, P., 'The multilevel hypernetwork dynamics of Complex Systems of Robot Soccer Agents', *ACM Transactions on Autonomous and Adaptive Systems*, Vol. 2, No. 2, (23 pages), June 2007.

'Multidimensional Events in Multilevel Systems, in Albeverios S,; Audrey D,; Giordano P,; Vancheri A. (Eds.) (2007) *The Dynamics of Complex Urban Systems. An Interdisciplinary Approach*. Springer, Berlin.

Jeffery Johnson, Katerina Alexiou, Anne Creigh- Tyte, Scott Chase, Alex Duffy, Claudia Eckert, Damian Gascoigne, Bimal Kumar, Eve Mitleton-Kelly, Michael Petry, Sheng Fen Qin, Alec Robertson, George Rzevski, Needet Teymur, Avril Thompson, Robert Young, Mateo Willis, Theodore Zamenopolous, 'Embracing Complexity in Design', in *Designing for the 21st Century: Interdisciplinary Questions and Insights*, Tom Inns (ed), Design Council, 129-149, 2007.

Boon, J.P ., Casti, J, Djerassi, K., Johnson, J. H., Lovett, A., Norretranders, T., Parera, V., Sommerer, C. Taylor, R.Thurner, B., 'A concrete example'. *Nature*, 444, 122-122, 2 November 2006.

['Can complexity help us better understand risk?' , Risk Management, 2006.](#)

['Hypernetworks for reconstructing the dynamics of multilevel systems', Proc. European Conference on Complex Systems, Oxford University, 25-29 September 2006.](#)

['Multidimensional networks in the science of the design of complex systems', Proc. ECCS 2005 Satellite Workshop: Embracing Complexity in Design. Open University, 33-48, Nov 2005.](#)

[Proc. ECCS 2005 Satellite Workshop: Embracing Complexity in Design. Open University, 33-48, Nov 2005 \(with Alexiou, A and Zamenopoulos, T.\).](#)

['Complexity through combination: an account of knitwear design; with M. Petre and H. Sharp *Design Studies*, ISSN 0142-694X, 2006.](#)

['Complexity science in collaborative design', *CoDesign*, Vol 1, No 4, Dec 2005, 223-242](#)

Earl, C., Johnson, J. H., Eckert, C., 'Complexity', in *Design process improvement - a review of current practice*, J. Clarkson C. Eckert (eds), 174-196, Springer, ISBN 1-85233-701-X, 2005

Johnson, J. H., 'Hypernetworks for reconstructing the dynamics of multilevel systems', Proc. European Conference on Complex Systems, ECCS' 06, Oxford, 25-29 September 2006.

[Full list of publications](#)

Teaching

<http://design.open.ac.uk/johnson1.html>

Links

<http://www.robofesta-europe.org>

<http://robots.open.ac.uk>

<http://www.robocup.org>

<http://agents.sci.brooklyn.cuny.edu/dev/rcj>

<http://www.complexityanddesign.net/>

<http://assyst.open.ac.uk>

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2017

- Johnson, Jeffrey; Nowak, Andrzej; Ormerod, Paul; Rosewell, Bridget and Zhang, Yi-Cheng eds. (2017). [Non-Equilibrium Social Science and Policy: Introduction and Essays on New and Changing Paradigms in Socio-Economic Thinking](#). Understanding Complex Systems. Cham, Switzerland: Springer.
- Johnson, Jeffrey; Ormerod, Paul; Nowak, Andrzej; Rosewell, Bridget and Zhang, Yi-Cheng (2017). [Non-Equilibrium Social Science and Policy](#). In: Johnson, Jeffrey; Nowak, Andrzej; Ormerod, Paul; Rosewell, Bridget and Zhang, Y-Cheng eds. Non-Equilibrium Social Science and Policy: Introduction and Essays on New and Changing Paradigms in Socio-Economic Thinking. Understanding Complexity. Cham, Switzerland: Springer, pp. 1–17.
- Johnson, Jeffrey; Fortune, Joyce and Bromley, Jane M. (2017). [Systems, Networks and Policy](#). In: Johnson, Jeffrey; Nowak, Andrzej; Ormerod, Paul; Rosewell, Bridget and Zhang, Yi-Chang eds. Non-Equilibrium Social Science and Policy: Introduction and Essays on New and Changing Paradigms in Socio-Economic Thinking. Understanding Complex Systems. Cham, Switzerland: Springer, pp. 111–134.
- Dum, Ralph and Johnson, Jeffrey (2017). [Global Systems Science and Policy](#). In: Johnson, Jeffrey; Nowak, Andrzej; Ormerod, Paul; Rosewell, Bridget and Zhang, Yi-Cheng eds. Non-Equilibrium Social Science and Policy: Introduction and Essays on New and Changing Paradigms in Socio-Economic Thinking. Understanding Complex Systems. Cham, Switzerland: Springer, pp. 209–225.
- Johnson, Jeffrey; Fortune, Joyce and Bromley, Jane M. (2017). [Multilevel Systems and Policy](#). In: Mitleton-Kelly, Eve; Paraskevas, Alexandros and Day, Christopher eds. Edward Elgar Handbook of Research Methods in Complexity Science and their Applications. London: Edward Elgar, (In Press).

2016

- Johnson, J.H. (2016). [Hypernetworks: Multidimensional relationships in multilevel systems](#). European Physical Journal Special Topics, 225(6), pp. 1037–1052.
- Johnson, Jeffrey H. (2016). [Embracing n-ary Relations in Network Science](#). In: Wierzbicki, Adam; Brandes, Ulrik; Schweitzer, Frank and Pedreschi, Dino eds. Advances in Network Science: 12th International Conference and School, NetSci-X 2016, Wroclaw, Poland, January 11-13, 2016, Proceedings. Lecture Notes in Computer Science (9564). Switzerland: Springer, pp. 147–160.

2015

- Rucco, Matteo; Sousa-Rodrigues, David; Merelli, Emanuela; Johnson, Jeffrey H.; Falsetti, Lorenzo; Nitti, Cinzia and Salvi, Aldo (2015). [Neural hypernetwork approach for pulmonary embolism diagnosis](#). BMC Research Notes, 8(617),
- Johnson, Jeffrey (2015). [Policy Design, Planning, and Management in Global Systems Science](#). In: Cardin, Michel-Alexandre; Krob, Daniel; Pao, Chuen Lui; Yang, How Tan and Wood, Kristin eds. Complex Systems Design & Management Asia. Designing Smart Cities:

Proceedings of the First Asia - Pacific Conference on Complex Systems Design & Management, CSD&M Asia 2014. Springer, pp. 125–132.

2014

- Johnson, Jeffrey; Jimenez-Romero, Cristian; Rodrigues, David and Bromley, Jane M. (2014). [Hypernetwork-based peer marking for scalable certificated mass education](#). In: European Conference on Complex Systems 2014, 22-26 September 2014, Lucca, Italy.

Associated with:

Design

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Plenary Speakers

Plenary Speech Title: **EU-Way Development-Efficient & Rational Development**



Mr. Masato Nakagawa, [DENSO CORPORATION](#), Executive Fellow (Visiting Professor of [Hiroshima University](#) (Technology transfer theory)) was born at the countryside in Aichi Prefecture in December 30 on 1956, He graduated at [Mechanical Engineering of Faculty of Engineering in Hiroshima University](#) in 1980/03/31 and entered in 1980/04/01 in Denso that belong to Diesel Pump Engineering Department. He lives abroad for a long time such that 5 years at Iowa in USA, one year at London in UK, 10 years at Düsseldorf in Germany, one year and half at Amsterdam in Netherland, one year at Munich in Germany

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and now Tokyo Office in Japan. He established Powertrain Engineering Center in Germany during his stay in Germany.

His hobby is Golf and Creed · Preferred words is



Plenary Speakers

Plenary Speech Title: **Innovation on Manufacturing Generated by Intelligent Technologies**



Mr. Ken-ichi Tanaka is Executive Fellow of Corporate Research & Development Group, Mitsubishi Electric Corporation, Japan

CV:

March 1979 Graduated from Aeronautical Engineering, Kyoto University, Japan

March 1981 Completed Master's degree in Aeronautics at Graduate School of Engineering, Kyoto University

email@address

Appointments

April 1981 Joined Mitsubishi Electric Corporation, Japan

October 2005 Department Manager of Systems Technology Laboratory, Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan

April 2008 Department Manager of Electromechanical Technology Laboratory, Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan

April 2010 General Manager of Advanced Technology R&D Center, Mitsubishi Electric Corporation, Japan

April 2014 Executive Fellow of Corporate Research & Development Group, Mitsubishi Electric Corporation (current position), Japan

Abstract:

Invited Speakers

Invited Speech Title will be appeared soon.



Dr. Henrik Hautop Lund is [Professor at Technical University of Denmark](#), is [head of the Center for Playware](#), and has published more than 175 scientific papers and several patents. He has served in [the Danish National Research Council](#). He is World Champion in RoboCup Humanoids Freestyle 2002, has developed shape-shifting modular robots, and has collaborated closely on robotics, ALife and AI with

henrik.hautop.lund@gmail.com

companies like LEGO, Kompan, BandaiNamco, etc. for the past two decades. His Center for Playware at the Technical University of Denmark has a long track record of developing modular robotic playware for playful contextualized IT training in Sub-Saharan Africa, for playful rehabilitation for sport, for music, for wearable, for play, and for education. These modular playware technology developments include I-Blocks (LEGO bricks with processing power) and modular interactive tiles (larger bricks for physical rehab). Further, with the development of East-Africa's first science and business park, local entrepreneurship has been fostered amongst students graduating from the university degree programs in contextualized IT. Combining such skills, it became possible to develop technical skill enhancing football games and global connectivity based on modular playware for townships in South Africa for the FIFA World Cup 2010. Lately, together with international pop star and World music promoter Peter Gabriel, he has developed the MusicTiles app as a music 2.0 experience to enhance music creativity amongst everybody, even people with no initial musical skills whatsoever, and made physical modules for Peter Gabriel's live stage performance. In all cases, professor Henrik Hautop Lund and his research center develop modular playware technology in a playful way to enhance learning and creativity amongst anybody, anywhere, anytime.

Abstract:

Invited Speakers

Invited Speech Title will be appeared soon.



Luigipagliarini@gmail.com

Dr. Luigi Pagliarini is Professor of [The Academy of Fine Arts of Macerata](#), Italy, an artist, psychologist, multimedia and software designer, expert in robotics, AI and Artificial Life. He is currently [Professor at the Academy of Fine Arts of Macerata](#) (Italy) and Consultant Professor at DTU Center for Playware (Denmark). He has published in different international books, journals, congresses and conferences proceedings and has been rewarded with international prizes more than once. He has exhibited his work in different museums and institutions all over the world. Luigi Pagliarini has also worked for many different institutes and universities as professor or researcher and, as consultant, with many enterprises and multinational factories. His work has often been reported on many international newspapers, magazines and televisions.

Abstract:

Invited Speakers

Invited speech title will be appeared soon.



Dr. Takashi Yokomori is a Professor of Mathematics Department, Faculty of Education and Integrated Arts and Sciences, Waseda University, Tokyo.

Research themes: Automata and Formal Language Theory, Computational Learning Theory (e.g., Grammatical Inference), Theory of Natural Computing (e.g., Molecular Computing Theory, Bio-informatics, Chemical Reaction Computing)

yokomori@waseda.jp

Educational and Professional Careers:

1998 -- (present) : Professor, Waseda University, Japan
1997 -- 98: Professor, University of Electro-Communications, Japan
1989 -- 97: Associate Professor, University of Electro-Communications, Japan
1983 -- 89: Researcher, IIAS-SIS, Fujitsu Limited, Japan
1982 -- 83: Postdoctoral Fellow at Pennsylvania University, USA
1981 -- 82: Postdoctoral Fellow at McMaster University, Canada
1979 -- 81: Research Associate, Sanno College, Japan
1979 : D.Sci., University of Tokyo, Japan
1976 : M.Sci., University of Tokyo, Japan
1974 : B.Sci., University of Tokyo, Japan

Academic Activities:

Please refer to: <http://www.edu.waseda.ac.jp/~yokomori/activitye.html>

Selected Publications: (since 2010)

- F. Okubo and T. Yokomori : The computational power of capability of chemical reaction automata, *Natural computing*, Vol.15, pp.215-224, 2016.
- F. Okubo and T. Yokomori : Finite Automata with Multiset Memory: A New Characterization of Chomsky Hierarchy, *Fundamenta Informaticae*, Vol.138, pp.31-44, 2015.
- F. Okubo and T. Yokomori: Recent developments on reaction automata theory: A survey, in "Recent Advances in Natural Computing" (Selected results from the IWNC 7 Symposium), Series: Mathematics for Industry, vol.9 (Y. Suzuki and M. Hagiya, eds.), pp.1-22, Springer, 2014.
- G. Rozenberg et al.(Eds.): Handbook of Natural Computing, Chapter 34:"Molecular Computing Machines--Computing Models and Wet Implementations (by M. Hagiya, S. Kobayashi, K. Komiya, F. Tanaka, T. Yokomori), Springer, 2012.
- F. Okubo, S. Kobayashi and T. Yokomori : On the properties of language classes defined by bounded reaction automata, *Theoretical Computer Science*, Vol.454, pp.206-221, 2012.
- F. Okubo, S. Kobayashi and T. Yokomori : Reaction Automata, *Theoretical Computer*

Science, Vol.429, pp.247-257, 2012.

- F. Okubo and T. Yokomori : On the Hairpin Incompletion, *Fundamenta Informaticae*, Vol.110, pp.255-269, 2011.

- M. Ionescu, G. Paun, M. Perez-Jimenez and T. Yokomori : Spiking Neural dP-systems, *Fundamenta Informaticae*, Vol.111, pp.423-436, 2011.

- F. Okubo and T. Yokomori : Morphic Characterizations of Language Families in Terms of Insertion Systems and Star Languages, *Intern. J. of Foundations of Computer Science*, Vol.22, No.1, pp.247-260, 2011.

- F. Manea, V. Mitran and T. Yokomori : Some Remarks on the Hairpin Completion, *Intern. J. of Foundations of Computer Science*, Vol.21, No.5, pp.859-872, 2010.

- O. Ibarra, M. Perez-Jimenez and T. Yokomori : On Spiking Neural P-systems, *Natural Computing*, Vol.9, pp.475-491, 2010.

(For full details, please refer to:

<http://www.edu.waseda.ac.jp/~yokomori/publiste.html>)

[Contact]

Prof. Takashi Yokomori, Dr. Sci. (yokomori@waseda.jp)

Dept of Math., Faculty of Edu. and Integrated Arts and Sci., Waseda University

1-6-1 Nishiwaseda, Shinjuku-ku, Tokyo 169-8050 JAPAN

Tel:+81-3-3202-8373; Fax:+81-3-3207-8857

Abstract:

Invited Speakers

Invited Speech Title : **Harnessing over a Million CPU Cores to Solve a Single Hard Mixed Integer Programming Problem on a Supercomputer**



Dr. Yuji Shinano is Researcher, [Zuse Institute Berlin](http://www.zuse-institute-berlin.de), Germany

CV:

1997 PhD Engineering, Tokyo University of Science, Japan

1994 MS Engineering, Tokyo University of Science, Japan

1992 BS Engineering, Tokyo University of Science, Japan

shinano@zib.de

Appointments

2010/04 – present Researcher, Zuse Institute Berlin, Germany

2010/10– present Guest Associate Professor, The Institute of Statistical Mathematics, Japan

2009/03 – 2009/12 Visiting Zuse Institute Berlin for Sabbatical leave

2004 – 2010/03 Associate Professor, Tokyo University of Agriculture and Technology, Japan

1999 – 2004 Assistant Professor, Tokyo University of Agriculture and Technology, Japan

1997 – 1999 Research Assistant, Tokyo University of Science, Japan

1994 – 1997 Research Fellow of the Japan Society for the Promotion of Science, Japan

Recent Publications

1. Y. Shinano, T. Achterberg, T. Berthold, S. Heinz, T. Koch. ParaSCIP: a parallel extension of SCIP. Competence in High Performance Computing 2010, Christian Bischof, Heinz-Gerd Hegering, Wolfgang Nagel, Gabriel Wittum (Eds.), pp. 135–148, 2012.
2. T. Koch, T. Ralphs, Y. Shinano. Could we use a million cores to solve an integer program? Mathematical Methods of Operations Research, 76(1):67–93, 2012.
3. Y. Shinano, T. Achterberg, T. Berthold, S. Heinz, T. Koch, M. Winkler. Solving hard MIPLIB2003 problems with ParaSCIP on supercomputers: An update. in Proceedings of the 2014 IEEE International Parallel & Distributed Processing Symposium Workshops, IPDPSW'14, (Washington, DC, USA), pp. 1552–1561, IEEE Computer Society, 2014.
4. G. Gamrath, T. Koch, S. J. Maher, D. Rehfeldt, Y. Shinano. SCIP-Jack - A solver for STP and variants with parallelization extensions. Math. Prog. Comp. pp.1 – 66, 2016.
5. Y. Shinano, T. Achterberg, T. Berthold, S. Heinz, T. Koch, M. Winkler: Solving open MIP instances with ParaSCIP on supercomputers using up to 80,000 cores.

- In: 2016 IEEE International Parallel and Distributed Processing Symposium (IPDPS), pp. 770–779. IEEE Computer Society, Los Alamitos, CA, USA, 2016.
6. Y. Shinano, S. Heinz, S.Vigerske, M.Winkler. FiberSCIP - A shared memory parallelization of SCIP. accepted for publication in INFORMS Journal on Computing, 2017.

Research Interests and Expertise

My research expertise is in the field of mathematical optimization programming problems and parallel computing. I am interested in the application of parallel computing to solve very hard discrete optimization problem instances in the real-world.

Currently I am involved in the development of the SCIP Optimization Suite at the Zuse Institute Berlin. I am the developer of UG which is a software framework to parallelize state-of-the-art MIP solvers and is a package in the SCIP Optimization suite.

Abstract:

Mixed integer programming (MIP) is a general form to model combinatorial optimization problems and has many industrial applications. The performance of MIP solvers, software packages to solve MIPs, has improved tremendously in the last two decades and these solvers have been used to solve many real-world problems. However, against the backdrop of modern computer technology, parallelization is of pivotal importance. In this way, ParaSCIP is the most successful parallel MIP solver in terms of solving previously unsolvable instances from the well-known benchmark instance set MIPLIB by using supercomputers. It solved two instances from MIPLIB2003 and 12 from MIPLIB2010 for the first time to optimality by using up to 80,000 cores of supercomputers. Additionally, a specialized version of ParaSCIP for solving Steiner tree problems called SCIP-Jack solved three open instances from the Steiner tree test benchmark set PUC. ParaSCIP has been developed by using the Ubiquity Generator (UG) framework, which is a general software package to parallelize any state-of-the-art branch-and-bound based solvers. The UG framework is currently being used to develop ParaXpress, a distributed memory parallelization of the commercial MIP solver Xpress. Moreover, it is being used to parallelize PIPS-SBB, a solver for stochastic MIPs. Since Xpress is a multi-threaded solver and ParaSCIP can run at least 80,000 processes in parallel for solving a single MIP, ParaXpress could handle over a million CPU cores. Furthermore, the parallelization of PIPS-SBB by the UG framework has the potential to also handle over a million CPU cores. In this talk, a ground design of the UG framework and its latest extensions to harness over a million CPU cores will be presented and preliminary computational results will be provided.

Invited Speakers

Invited Speech Title: **Predicting Trust of Humanoid Robots in Service Scenarios; Implications for Human-Robot-Human Interaction**



Dr. Halimahtun M. Khalid is President of Damai Sciences, Malaysia. She obtained her PhD in cognitive ergonomics from University College London, UK. She has 35 years of knowledge and experience in HCI, human factors and ergonomics. She was Professor of Cognitive Ergonomics at Universiti Malaysia Sarawak, Malaysia, where she established the Institute of Design & Ergonomics Application, the Centre for Applied Learning & Multimedia, and the first Virtual Reality Centre. She has delivered several keynotes at international conferences, and has more than 100 publications in refereed journals and proceedings. She received research grants from the

mahtunkhalid@gmail.com

European Commission and US Air Force for projects related to mass customization, cultural cognition, disaster attitudes, and human-robotic trust. Dr. Khalid is the Founder and Past President of the Human Factors and Ergonomics Society Malaysia, and Past President of the Southeast Asian Network of Ergonomics Societies. She is Past Chair of the Science Technology & Practice Committee of the International Ergonomics Association (IEA), and Past Chair of the Affective Design Technical Committee of the IEA. She is a Certified Human Factors Professional with BCPE USA, and a Fellow of the International Ergonomics Association.

Abstract:

Trust is a key element in the development of effective human-robot-human relationships. In particular, trust affects system effectiveness as it relates to safety, performance, and usability. With the development and integration of humanoid robots in human teams, the issue of predicting trust has become a focal concern. Setting the scene, we will trace a decade of research into human-robotic trust starting from 2006. One of the research gaps is the lack of a reliable measure of human-robotic trust. Past studies have emphasized on subjective measurements only. In this plenary, we will present a method where subjective (general trust, psychological) and objective (physiological) measures were mapped to predict human trust of humanoid robots in performing social tasks in a multi-actor, multi-dialog, and bilingual contexts. We will present the findings from two studies, involving different humanoid robots and diverse types of interactive dialogs in business, disaster and healthcare application domains. Extraction of objective measures includes facial expressions, voiced speech, camera-based heart rate, and gestural posture. Subjective trust comprised fifteen items that measured ability, benevolence and integrity. A neuro-fuzzy algorithm extracted rules that predicted low, medium and high trust levels. The implications of the findings on future human-robotic trust relationships and limitations of the method will be discussed.