

Newsletter

Issue 5, 2009

Welcome to this newsletter. The CCI has grown from strength to strength making it one of the best AI-related groups in the UK and internationally. This is reflected in the RAE result. The largest group in the Computing submission we are very proud of the result. The number of papers has grown considerably. In particular our journal articles are outstanding. Another great year. I'd like to thank Shangming for producing these newsletters. He leaves us for pastures new. Good luck Shangming!

Professor Bob John

Inside this issue:

CCI Research Assessment Exercise 2008

The Research Assessment Exercise for 2008 has finished. The Centre was the largest component of the De Montfort University submission in Computer Science and Informatics - with ten staff submitted from the group out of 22.3 in total.

RAE results indicate that 10% of the CCI submission was quality that is

world-leading in terms of originality, significance and rigour and 35% was of a quality that is internationally excellent in terms of originality, significance and rigour. A full analysis of the results will take some time but this is a very creditable performance of which we are rightly proud.

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CCI 2008 RAE Profile

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|-----|-----|-----|------|
| 15% | 40% | 35% | 10% |

Activities of CCI Members

Membership of Technical Committee for Professional Organisations

Professor Bob John is Vice Chair of the Fuzzy Technical Committee (FTC) of the IEEE Computational Intelligence Society. This is a very prestigious committee that drives the fuzzy logic aspects of the Society. He co-chairs a special task force on 'Extensions to Type-1 Fuzzy Sets' which has organised a number of two special sessions at FUZZ-IEEE 2004-2007 and edited a special issue of IEEE Transaction on Fuzzy Systems. He is a Member of the 'Future in Fuzzy Sets and Systems' Task Force of the IEEE Technical Committee on Granular Computing .

Dr. Shang-Ming Zhou is the member of IEEE SMC Technical Committee on Enterprise Information Systems.

Editorial Membership

Professor Bob John is a Member of the Editorial Board of the International Journal of Cognitive Neurodynamics.

Dr Francisco Chiclana has participated in the activities of editing the following journals:

- ◆ Editorial Advisory Board Member of The Open Cybernetics and Systemics Journal
- ◆ Co-editor of special issue enti-

Editor:

Dr. Shang-Ming Zhou

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ted FUZZY APPROACHES IN PREFERENCE MODELLING, DECISION MAKING AND APPLICATIONS in the *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*.

- ◆ Co-editor of special issue on COMPUTING WITH WORDS IN DECISION MAKING in the *International Fuzzy Optimization and Decision Making Journal* (in progress).

Dr. Aladdin Ayesh is a guest editor on two special issues related to the area of nature-inspired systems. The first special issue is on swarm intelligence algorithms and applications for the well respected *Computational Intelligence: An International Journal*. The second is on bio-inspired computation for engineering applications in the new *International Journal of Bio-Inspired Computation* (IJBIC).

Chairing Conferences

Professor Adrian Hopgood organised the Tutorial/Workshop day at the Twenty-eighth SGAI International Conference on Artificial Intelligence (AI-2008), 9-11 December, 2008. Also he will organise it at the AI-2009.

Dr Francisco Chiclana has been a chairperson of the following conference and special sessions:

- ◆ Special Session on "Soft Decision Making - Theory and Applications" for the IEEE International Conference on Fuzzy Systems (FUZZ_IEEE), Hong-Kong, China (2008).
- ◆ Special Session on "Fuzzy Decision Making Issues: Preference Modelling and Aggregation" for the 8th International FLINS Conference on Computational Intelligence in Decision and Control, Madrid, Spain (2008).
- ◆ Co-chair of the International Conference of Computational Intelligence and Intelligent Systems, London, UK (2008, 2009).

Dr. Shang-Ming Zhou is a chairperson of the following conferences and special session:

- ◆ Co-chair of Special Session on "Swarm Intelligence" for the IEEE International Congress on Evolutionary Computation (CEC), Hong-Kong, China (2008).
- ◆ Chair of Programme Committee for 2009 Global Congress on Intelligent Systems

(GCIS 2009).

- ◆ Co-chair of Programme Committee for 2009 World Congress on Software Engineering (WCSE 2009).

Dr. Aladdin Ayesh is to chair two symposiums on emotions modeling and swarm intelligence at AISB'09. The Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB) is the UK dedicated AI society. Dr. Ayesh was elected to its committee board earlier this year. Also he is to chair the following conferences:

- ◆ AISB'10 convention to be hosted in De Montfort University.
- ◆ Gameon'10 conference to be hosted in De Montfort University.

Memberships of Conferences Committees

Dr Francisco Chiclana has been invited to be a member of programme committees (PC) for the following conferences:

- ◆ 2008 Fuzzy Logic and Intelligent Technologies in Nuclear Science (FLINS 2008) Conference, Madrid, Spain.
- ◆ 2008 International Conference of Computational Intelligence and Intelligent Systems, Hong Kong, China.
- ◆ 8th International Conference on Electronic Commerce and Web Technologies - EC-Web '08, Turin, Italy.
- ◆ GC'08 CCNS (IEEE Globecom 2008 Computer and Communications Network Security Symposium)
- ◆ AI-2008 Twenty-eighth SGAI International Conference on Artificial Intelligence, Cambridge, UK.
- ◆ 2009 EUROFUSE Workshop Preference Modelling and Decision Analysis, Public University of Navarra, 16-18 September, 2009.
- ◆ Second IEEE Symposium of Computational Intelligence in Multi-Criteria Decision Making, Nashville, TN, March 30 to April 2, 2009.
- ◆ 2009 Global Congress on Intelligent Systems (GCIS 2009).
- ◆ 2009 International Conference on Intelligent Systems and Knowledge Engineering (ISKE2009).

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- ◆ 2009 International Conference on Fuzzy Computation (ICFC 2009).

Dr. Yingjie Yang is a member of PC for the following conferences:

- ◆ 2009 International Joint Conference on Neural Networks (IJCNN'09).
- ◆ The Sixth International Symposium on Neural Networks (ISSN2009).
- ◆ International Conference on Adaptive Business Systems (ABS'09).
- ◆ 2009 International Conferences on Machine Learning and Cybernetics(ICMLC2009).
- ◆ 2009 World Congress on Nature and Biologically Inspired Computing (NaBIC'09).
- ◆ International Conference on Soft Computing and Pattern Recognition (SoCPaR2009).
- ◆ The 5th International Conference on Natural Computation (ICNC'09).
- ◆ The 6th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD'09).
- ◆ IADIS International Conference e-COMMERCE 2009.
- ◆ 2009 IEEE International Conference on Grey Systems and Intelligent Services.

Dr. Shang-Ming Zhou has been invited to serve as a PC member for the following conferences:

- ◆ 2009 IFSA World Congress and EUSFLAT Conference (IFSA-EUSFLAT'09)
- ◆ 2009 World Congress on Nature and Biologically Inspired Computing (NaBIC'09)
- ◆ 2009 International Conference on Soft Computing and Pattern Recognition (SoCPaR 2009)
- ◆ 2009 UK Workshop on Computational Intelligence (UKCI'09).
- ◆ 2008 IEEE International Conference on Computational Intelligence and Security (CIS'08).
- ◆ 2008 IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC'08).
- ◆ 2008 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE'08) (Member of Technical Committee).
- ◆ 2008 IEEE Congress on Evolutionary Computation (CEC'08) (Member of Technical Committee).

- ◆ 2008 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE'08) (Member of Special Session Committee).

- ◆ 2008 UK Workshop on Computational Intelligence (UKCI'08).

Dr. Simon Coupland was invited to be a PC member for the following conferences:

- ◆ 2009 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE'09)
- ◆ 2009 UK Workshop on Computational Intelligence (UKCI'09).

Invited Talks

Dr. Francico Chiclana has been invited by Bernard de Baets, Janos Fodor, Pedro Burillo and Humberto Bustince, Organizing chairs of EUROFUSE 2009 to be held in Pamplona (Spain), to be one of their five invited speakers.

In May 2008 Dr. Mario Gongora was invited to "Streetwise Robots" and "Meet the experts" (as expert!) at the DANA Centre (Science Museum) in London. There, with the PhD student Ben Passow, he presented the Animation and Helicopter robots to the public and the media. He also participated and robotics expert in a panel and Q&A session with the attendees.

Dr. Aladin Ayesh gave a keynote talk on Multi-agent modelling and applications to robotics and cognition at The European Simulation and Modelling Conference (ESM'08) and chaired three related sessions on Agent Based Simulation. Also he will be giving a talk at AI in Games workshop at Essex University. AI in Games is an EPSRC funded network fostering research in game technology and the development and application of artificial intelligence techniques in games.

International collaborations

Dr. Francico Chiclana actively collaborated in his research with the following researchers from overseas:

- ◆ Francisco Herrera, Enrique Herrera-Viedma, Sergio Alonso, Francisco Javier Cabrerizo, Jeus Alcala-Fernandez, Carlos Porcel Soft Computing and Intelligent Information Systems Research Group at the University of Granada in Spain;
- ◆ Luis Martinez, Francisco Mata from

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University of Jaen in Spain;

- ◆ Ricardo Alberto Marques Pereira from Trento University in Italy.

In June 2008, Dr. Mario Gongora was invited for the Campus Party Latin America event held at the International Exhibition Centre in Bogota, Colombia. At the event, attended by over 2000 students and many academics from all over Latin America, he participated in various activities at the event, such as showcases, gave a talk on the latest robotics research in our group and the IOCT, and acted as international judge for a robotic competition. During the visit Dr. Gongora also discussed Collaboration possibilities with the Javeriana University in Bogota, Colombia

Dr. Simon Coupland was extensively involved in collaboration with the University of Missouri of eldercare and GPGPU. He gave two invited talk there: the EEC Department on type-2 and the eldercare group on British approaches to eldercare technology.

Most Cited Scientists in Engineering

Bob John's two papers with the following details appear in the top 1% most cited papers on ISI Web of Science:

Title: Type-2 fuzzy sets made simple
Author(s): MENDEL, JM; JOHN, RIB
Source: IEEE TRANSACTIONS ON FUZZY SYSTEMS Volume: 10 Issue: 2 Pages: 117-127 Published: APR 2002 Times Cited: 196
DOI: PII S1063-6706(02)02960-0.

Title: Interval type-2 fuzzy logic systems made simple

Author(s): MENDEL, JM; JOHN, RI; LIU, FL

Source: IEEE TRANSACTIONS ON FUZZY SYSTEMS Volume: 14 Issue: 6 Pages: 808-821 Published: DEC 2006

Times Cited: 53. DOI: 10.1109/TFUZZ.2006.879986.

His papers have 389 citations and he has an h-index of 8.

Promotion

Professor Bob John is now the new head of Department of Informatics in the Faculty of Technology. Dr. Simon Coupland has been promoted to Senior Research Fellow in 2008.

Dr. Francico Chiclana was classified as one of the "Most Cited Scientists in Engineering" in the ISI Web of Science - Essential Science Indicators, i.e. I am amongst the top 1% of most cited scientist in this field and I am ranked at position 3318 out of a total 6449. Three of his papers are also classified as highly cited, being therefore amongst the top 1% of most cited papers, and the third one is in 'Research Front' category:

- ◆ F. Chiclana, F. Herrera, E. Herrera-Viedma: Integrating Three Representation Models in Fuzzy Multipurpose Decision Making Based on Fuzzy Preference Relations. *Fuzzy Sets and Systems* 97:33 - 48, 1998. doi:10.1016/S0165-0114(96)00339-9 (84 citations).
- ◆ F. Chiclana, F. Herrera, E. Herrera-Viedma: Integrating Multiplicative Preference Relations in a Multipurpose Decision-making Model Based on Fuzzy Preference Relations. *Fuzzy Sets and Systems* 122(2), 277-291, September 2001. doi:10.1016/S0165-0114(00)00004-X (52 citations).
- ◆ E. Herrera-Viedma, F. Herrera, F. Chiclana, M. Luque: Some Issues on Consistency of Fuzzy Preference Relations. *European Journal of Operational Research* 154(1):98 - 109, April 2004. doi:10.1016/S0377-2217(02)00725-7 (40 citations).

Dr Chiclana's 29 records in the ISI Web of Science have received a total of 582 citations, with an average 20 citations per paper. This is well above the national average for Computer Science and Engineering in England. Dr Chiclana has an h-index of 11. The h-index is based on the set of an author's most cited papers and the number of citations that he or she has received in the papers published by other researchers. The h-index can be applied to the productivity and impact of an individual scientist or a group of scientists in an institution.

PhD Supervision

The following PhD students have finished their PhD research with supervision from Dr. Aladdin Ayesh

- ♦ Mohammed Mohssen Alkhawlan (2008) - Access Network Selection in Heterogeneous Networks [first supervisor (director of study)];
- ♦ Shihadeh Alqrainy (2008) - A Morphological - Syntactical Analysis Approach for Arabic Textual Tagging [first supervisor (director of study)];
- ♦ Hasan AlSerhan (2008) - Extraction of Arabic Word Roots: An Approach Based on Computational Model and Multi-Back propagation Neural Network [first supervisor (director of study)];
- ♦ Ammar Thabit Zahary (2008) - Improving Routing Performance of Multipath Ad Hoc On-

demand Distance Vector in Mobile Ad Hoc Networks [first supervisor (director of study)]

- ♦ Abdulsamad Al-Marghilani (2008) - Application of Self-Organizing Maps to Multilingual Text Mining (Arabic-English) [second supervisor]

Dr. Francisco Chiclana worked as a supervisor of Sarah Greenfield on type-2 fuzzy logics.

A new PhD student D Martin Rhodes (joint technology and IOCT) joined the CCI in 2008 with supervisions by Dr. Simon Coupland, Tracy Cruickshank (Humanities) and Professor Bob John.

New Grants

Professor Bob John and Dr. Simon Coupland have won a KTP with Go MAD to build a life coaching web application that makes use of Artificial Intelligence with £74, 405.

In Feb 2008, Dr. Mario Gongora won a pathfinder grant from the Lachesis Fund for £25K to do a feasibility study and a business for developing a commercial application according to customer behaviour modelling in large venues using AI. In September 2008 Dr. Gongora won a Grant from the Lachesis Fund for £225K to develop the VenueSim project, a customer behaviour modelling system for large venues. As part of the project, Steve Matthews was recruited for software development for VenuSim. In 2008, Dr. Mario Gongora won a conference grant from Royal Society for attending WCCI in June 2008. In Jan 2009, in a joint proposal with Dr. Simon Coupland, Dr. Mario Gongora

won an Innovation Fellowship grant for £16K to apply our expertise in computing and research in the care for the ageing population into computational aids for reminiscence training therapies.

Dr. Francisco Chiclana has successfully won an International Travel Grant from The Royal Academy of Engineering (Ref:08-107) to chair special session, present and disseminate research findings at The IEEE International Conference on Fuzzy Systems as part of the 2008 IEEE World Congress on Computational Intelligence in Hong-Kong (China) in June 2008. Amount of money is £600.

Dr. Simon Coupland won a conference grant with £715 to attend the IMPU 2008, Malaga, Spain.

Publications

Journal Articles

- ♦ **Guest Editors' Introduction: Special Issue on Fuzzy Approaches in Preference Modelling, Decision Making and Applications**

F. Chiclana, E. Herrera-Viedma, S. Alonso and F. Herrera

Int. J. of Unc. Fuzziness and Knowledge Based Systems (ISSN: 0218-4885), 16(supp 02):v - vii, August 2008.

- ♦ **A Consistency Based Procedure to Estimate Missing Pairwise Preference Values**
S. Alonso, F. Chiclana, F. Herrera, E.

Herrera-Viedma, J. Alcala-Fernandez and C. Porcel, *International Journal of Intelligent Systems (ISSN 0884-8173)*, 23(2):155-175, February 2008.

- ♦ **A Fast Geometric Method for Defuzzification of Type-2 Fuzzy Sets**, Coupland, S. and John, R., *IEEE Transactions on Fuzzy Systems*, 16(4):929-941, 2008.

- ♦ **A Note on the Estimation of Missing Pairwise Preference Values: A Uninorm Consistency Based Method**

F. Chiclana, E. Herrera-Viedma, S. Alonso and F. Herrera, *Int. J. of Unc. Fuzziness and Knowledge Based Systems (ISSN: 0218-*

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- 4885), 16(supp 02):19-32, August 2008.
- ◆ **Access Network Selection based on Fuzzy Logic and Genetic Algorithms**
M. Alkhawani and A. Ayes, *Advanced Artificial Intelligence (AAI)*, 2008.
 - ◆ **An Interactive Decision Support System Based on Consistency Criteria**
S. Alonso, F. J. Cabrerizo, F. Chiclana, F. Herrera and E. Herrera-Viedma, *J. of Mult.-Valued Logic & Soft Computing (ISSN 1542-3980)*, 14, Number 3-5:371-386, 2008.
 - ◆ **Are Cognitive Styles an Important Factor in the Design of Electroacoustic Music Software?**
Eagelstone, B., Ford, N., Holdridge, P. and Carter, J. , *Journal of New Music Research*, 2008.
 - ◆ **Automated Group Decision Support Systems Under Uncertainty: Trends and Future Research**
R. I. John, S. -M. Zhou, J. M. Garibaldi, and F. Chiclana, *International Journal of Computational Intelligence Research* 2008.
 - ◆ **Autonomous Sailboat Navigation for Short Course Racing**
Stelzer, R. and Pröll, T., *Robotics and Autonomous Systems*, 56(7):604-614, July 2008.
 - ◆ **Bankruptcy Forecasting: An Empirical Comparison of AdaBoost and Neural Networks**
Esteban Alfaro Cortes, Noelia Garcia Rubio, Matias Gamez Martinez and David A. Elizondo, *Decision Support Systems*, 71:733-742, 2008.
 - ◆ **Classifying Mental Tasks Based on Features of Higher-Order Statistics from EEG Signals in Brain-Computer Interface**
S. -M. Zhou, J. Q. Gan and F. Sepulveda, *Information Sciences*, 178(6):1629-1640, 2008.
 - ◆ **Extracting Takagi-Sugeno Fuzzy Rules with Interpretable Submodels via Regularization of Linguistic Modifiers**
S. -M. Zhou and J. Q. Gan, *IEEE Transactions on Knowledge and Data Engineering*, 2008.
 - ◆ **Fuzziness Index Driven Fuzzy Relaxation Algorithm and Applications to Image Processing**
S.-M. Zhou, J. Q. Gan, L. Xu and R. I. John, *Annals of Operations Research*, 2008.
 - ◆ **Generalisation of Roughness Bounds in Rough Set Operations**
Yang, Y. and John, R., *International Journal of Approximate Reasoning*, 2008.
 - ◆ **Gradation of Stiffness of the Mucosa Inferior to the Vocal Fold**
Goodyer, EN., Dailey, SH. and Gunderson, M., *Journal of Voice*, 2008.
 - ◆ **Integration of a Consistency Control Module within a Consensus Decision Making Model**
F. Chiclana, F. Mata, S. Alonso, E. Herrera-Viedma and L. Martinez, *Int. J. of Unc. Fuzziness and Knowledge Based Systems (ISSN: 0218-4885)*, 16(suppl 01):35-53, April 2008.
 - ◆ **Intensity-based image registration using multiple distributed agents**
Tait, R.J., Schaefer, G. and Hopgood, A. A., *Knowledge-Based Systems*, 21:256-264, April 2008.
 - ◆ **Low-Level Interpretability and High-Level Interpretability: A Unified View of Data-Driven Interpretable Fuzzy System Modelling**
S. -M. Zhou, J. Q. Gan, *Fuzzy Sets and Systems*, 159:3091-3131, 2008.
 - ◆ **Multi-agent system for people detection and tracking using stereo vision in mobile robots**
R. Muñoz-Salinas, E. Aguirre, M. Garcia-Silvente, A. Ayes and M. Góngora, *Robotica*, 2008. doi:10.1017/S0263574708005092.
 - ◆ **New Geometric Inference Techniques for Type-2 Fuzzy Sets**
Coupland, S. and John, R., *International Journal of Approximate Reasoning*, 49 (1):198-211, September 2008.
 - ◆ **Recent Patents on Computational Intelligence**
Elizondo, D. and Matthews, S., *Recent Patents on Computer Science*.1(2)June 2008.
 - ◆ **Robotic Sailing: Overview**
Stelzer, R., *OGAI Journal (Oesterreichische Gesellschaft fuer Artificial Intelligence)*, 27 (2):2-3, June 2008.
 - ◆ **Type-1 OWA Operators for Aggregating Uncertain Information with Uncertain Weights Induced By Type-2 Linguistic Quantifiers**
S. -M. Zhou, F. Chiclana, R. I. John, J. M. Garibaldi, *Fuzzy Sets and Systems*, 159

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(24): 3281 – 3296, December 2008.

Book Chapters:

- ◆ **A Reward-Value Based Constructive Method for the Autonomous Creation of Machine Controllers**
Huemer, A., Elizondo, D. and Gongora, M., In Vera Kurkova, Roman Neruda and Jan Koutnik, editor, Lecture Notes in Computer Science, pages 773-782, 2008., Springer-Verlag.
- ◆ **Automated Overlay of Infrared and Visual Medical Images**
Schaefer, G., Tait, R.J., Howell, K., Hopgood, A.A., Woo, P. and Harper, J. VIII, pages 174-183, IGI Global, 2008. In User Centered Design for Medical Visualization (ed F. Dong, G. Ghinea and S. Y. Chen).
- ◆ **Knowledge-Based Systems**
Hopgood, A.A., IGI Global, 2008. In Encyclopedia of Artificial Intelligence (ed. Dopico, Dorado and Pazo).
- ◆ **On the generalization of the m-class RDP Neural Network**
Elizondo, D., Ortiz-de-Lazcano-Lobato, J. and Birkenhead, R. and In W. Duch et al. , editor, Lecture Notes in Computer Science, 2008. , Springer-Verlag.
- ◆ **Preferences and Consistency Issues in Group Decision Making**
F. Chiclana, E. Herrera-Viedma, S. Alonso and R.A. Marques Pereira, *Fuzzy Sets and Their Extensions: Representation, Aggregation and Models. Intelligent Systems from Decision Making to Data Mining, Web Intelligence and Computer Vision. Studies in Fuzziness and Soft Computing, Vol. 220*, H. Bustince, F. Herrera, J. Montero, editor, pages 219-237, Springer Verlag, 2008. ISBN: 978-3-540-73722-3.
- ◆ **Surface Reconstruction Techniques Using Neural Networks to Recover Noisy 3D Scenes**
Elizondo, D., Zhou, S.-M. and Chrysostomou C., In W. Duch et al. , editor, Lecture Notes in Computer Science, 2008., Springer-Verlag.
- ◆ **Type-2 Fuzzy Logic and Uncertainty**
John, R. and Mendel, J., Springer-Verlag, Accepted edition, 2008.

- ◆ **Using Different Transitivity Properties to Deal With Incomplete Fuzzy Preference Relations in Group Decision Making Environments**

S. Alonso, E.Herrera-Viedma, F. Herrera and F. Chiclana, In Uncertainty and Intelligent Information Systems, Bernadette Bouchon-Meunier, Christophe Marsala, Maria Rifqi & Ronald R Yager , editor, pages 229-239, World Scientific, 2008. ISBN: 978-981-279-234-1.

International Conferences:

- ◆ **A Fuzzy Logic System for Acoustic Fall Detection**
Popescu, M. and Coupland, S., In Marjorie Skubic, editor, Proc. 2008 AAAI Symposium on AI in Eldercare, Washington DC, USA., November 2008.
- ◆ **A Generalised Type-2 Fuzzy Logic System Embedded Board and Integrated Development Environment**
Coupland, S., Wheeler, J. and Gongora, M., In Proc. FUZZ-IEEE 2008 (in WCCI 2008), Hong Kong, June 2008.
- ◆ **A Millenson-Based Approach to Emotion Modelling**
W. Blewitt, A. Ayes, R. I. John, and S. Coupland, In Conference on Human System Interaction (HSI'08), Poland, 2008., IEEE.
- ◆ **A Parallel Surrogate-Assisted Multi-Objective Evolutionary Algorithm for Computationally Expensive Optimization Problems**
Anna Syberfeldt, Henrik Grimm, Amos Ng and Robert John, In IEEE Congress on Evolutionary Computing, 2008.
- ◆ **A Practical Approach to Type-1 OWA Operation for Soft Decision Making**
S. -M Zhou, F. Chiclana, R. I. John, J. M. Garibaldi, In Proc. of The 8th International FLINS Conf. on Computational Intelligence in Decision and Control, pages 507-512, Madrid, Spain, 2008.
- ◆ **A Selection Process to Deal with Incomplete Fuzzy Preference Relations in a 2-tuple Fuzzy Linguistic Approach**
S. Alonso, J. Cabrerizo, E. Herrera-Viedma, F. Herrera and F. Chiclana. In The 8th International FLINS Conference on Computational Intelligence in Decision and Control (FLINS 2008), pages 289-294, Madrid,

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Spain, 2008.

- ◆ **Airport Noise Simulation Using Neural Networks**
Yang, Y., Hinde, C. J. and Gillingwater, D., In Proceedings of IJCNN, Hong Kong, June 2008.
- ◆ **Aqua Swarms: Design and Implementation of Water Surface AUV**
M. O. Daglitz and A. Ayesh, In Swarm Intelligence Algorithms and Applications Symposium (SIAAS\`08) - AISB 2008 Convention, April 2008., AISB.
- ◆ **Artificial Modeling of Biologically Inspired Left/Right Asymmetry for Modeling Developmental Processes**
Gongora, M. and Rodas, M., In Proc. 4th International IEEE Conference on Intelligent Systems 2008 (IS 2008), pages 3-21 to 3-26, Varna, Bulgaria, September 2008.
- ◆ **Compact Fuzzy Rules Induction and Feature Extraction Using SVM with Particle Swarms for Breast Cancer Treatments**
S. -M. Zhou, R. John, X. Y. Wang, J. M. Garibaldi and I. O. Ellis, In Proc. of IEEE Congress on Evolutionary Computation (CEC), Hong Kong, China, 2008.
- ◆ **Construction of Consistent Fuzzy Preference Relations Using Uninorms**
F. Chiclana, S. Alonso, E. Herrera-Viedma and F. Herrera, In Proc. of IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2008), pages 1269-1273, Hong Kong, China, 2008.
- ◆ **Control of Vocal Fold Cover Stiffness By Laryngeal Muscles**
Chhetri DK, Berke GS, Lotfizadeh A, Goodyer EN, In THE AMERICAN LARYNGOLOGICAL ASSOCIATION, spring meeting, Orlando , May 2008.
- ◆ **Development of Software Effort and Schedule Estimation Models Using Soft Computing Techniques**
A. Sheta, D. Rine, and A. Ayesh, In IEEE World Congress on Computational Intelligence, Hong Kong, 2008., IEEE.
- ◆ **Energy Efficient PSO-based Algorithm for Optimizing Autonomous Wireless Sensor Network**
M. Al-Obaidy and A. Ayesh, In European Simulation and Modelling (ESM\`2008) Conference, pages 201-206, Le Havre, France, 2008.
- ◆ **Evolving a Neural Network Using Dyadic Connections**
Huemer, A., Gongora, M. and Elizondo, D., In Proc. International Joint Conference on Neural Networks (IJCNN 2008), Hong Kong, June 2008.
- ◆ **Geometric Logical Operations for Type-2 Fuzzy Sets**
Coupland, S. and John, R., In IMPU 2008, Malaga, Spain, 2008.
- ◆ **Global Roughness of Approximation and Boundary Rough Sets**
Yang, Y. and John, R., In Proceedings of Fuzzy-IEEE Conference, Hong Kong, June 2008.
- ◆ **Identification of a Chemical Process Reactor Using Soft Computing Techniques**
Heba Al-Hiary, Alaa Sheta, and Aladdin Ayesh, In Proc. of IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2008), Hong Kong, China, 2008.
- ◆ **Improving the Sales Demand Forecasting Process**
Miller, S.M., Khalil, R. and Stockton, D., In Proceedings of The 6th International Conference on Manufacturing Research (ICMR08), Brunel University, London, UK., September 2008.
- ◆ **Inducing Linguistic Weights for Type-1 OWA Operators in Soft Decision Making**
S. -M Zhou and F. Chiclana, In Proc. of IEEE International Conference on Fuzzy Systems (FUZZ-IEEE) , pages 1626-1633, Hongkong, China, June 2008.
- ◆ **Investigation into the role of sequence-driven-features for prediction of protein structural classes**
S. Nanuwa and H. Seker, In The 8th IEEE International Conference in Bioinformatics and Bioengineering, October 2008.
- ◆ **Is Paice Method Suitable for Evaluating Arabic Stemming Algorithms?**
H. AlSerhan, S. ALQRAINY, and A. Ayesh, In International Conference on Computer Engineering and Systems (ICCES\`08), Cairo, Egypt, 2008.
- ◆ **Kernels of Grey Numbers and Their Operations**
Yang, Y. and Liu, S., In Proceedings of Fuzzy-IEEE Conference, Hong Kong, June 2008.
- ◆ **Maximum Power Point Tracking of PV System Using ANFIS Prediction and Fuzzy Logic Tracking**
Abdulaziz M. S. Aldobhani and Robert John, In IAENG International Conference on Control and Automation, March 2008.

Publications

- ◆ **Miniaturized dual-channel high-end receivers for GNSS software defined radio applications**
Y. Adane, M. Bavaro, J. Gow, E. Goodyer, M. Dumville, In Miniaturized Dual-Channel High-End Receivers For Gnss Software Defined Radio Applications, Navitec 2008, December 2008.
- ◆ **Modeling the Emotional State of an Agent through Fuzzy Logic With Reference to the Geneva Emotion Wheel**
W. F. Blewitt and A. Ayesh, In European Simulation and Modelling (ESM\ '2008) Conference, pages 279-283, Le Havre, France, 2008.
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Sub-groups within the CCI

Bio-Health Informatics

The Bio-Health Informatics research group is a multi-disciplinary research team at the Centre of Computational Intelligence in the School of Computing, De Montfort University. This group is dedicated to developing the state-of-the-art, accurate and reliable computer-based tools for computational decision making in biology and healthcare. The group supports MSc Bioinformatics programme and offers MPhil and PhD studies in various computational biology and health related subjects.

Fuzzy Logic

The Fuzzy Logic Group is a world leading group in the area of type-2 fuzzy logic. This group is dedicated to making a significant contribution to the theoretical foundations and real world applications of uncertainty models, including fuzzy sets, rough sets and grey systems.

Mobile Robotics and Creative Computing

Intelligent Mobile Robots and Creative Computing (IMRCC) Group came about as a result of expansions in the Centre for Computational Intelligence (CCI) and in our robotics portfolio. This portfolio expanded from a single undergraduate module in mobile robotic systems to a range of undergraduate and postgraduate modules and programs supported by increase in number of PhD students and substantial investment by the University in mobile robots.