Institution: De Montfort University

Unit of Assessment: 11 Computer Science and Informatics

a. Overview

The submission is from staff in the School of Computer Science and Informatics in the Faculty of Technology at De Montfort University (DMU). The School works across discipline boundaries, carrying out world leading research with high impact.

Research in the School is structured around the following research groups:

- Centre for Computational Intelligence (CCI) (www.dmu.ac.uk/cci)
- Centre for Computing and Social Responsibility (CCSR) (www.dmu.ac.uk/ccsr)
- Cyber Security Centre (CSC) (www.dmu.ac.uk/csc)
- De Montfort University Interdisciplinary Group in Intelligent Transport Systems (DIGITS) (www.dmu.ac.uk/digits)
- Imaging and Displays Research Group (IDRG) (www.dmu.ac.uk/idrg)
- Software Technology Research Laboratory (STRL) (www.dmu.ac.uk/strl)

The boundaries between the research groups are porous, encouraging inter-disciplinary research, and the collaborative supervision of research students. Since RAE 2008, researchers within the School have produced in excess of 776 research outputs: 349 journal articles (45%), 365 conference contributions (47%), 50 book chapters (6%) and 12 books (2%) (data extracted from the De Montfort Open Research Archive www.dora.dmu.ac.uk).

b. Research strategy

Over this census period, the School has retained the research strategies that proved successful in the previous census period, whilst seeking to further evolve and advance our existing research themes. As a result, new research groups have been created within the school (CSC, DIGITS) and all existing research groups have been supported and strengthened with investment in new Professors (**S Yang** – CCI, **Herrera-Viedma** – CCI and DIGITS**, Hendler** – STRL), Reader (**Neri** – CCI, and subsequently awarded Professorial Chair), Lecturers (**Kenny** – CCI, **Flick** – CCSR), Research Fellows (**Shaw** – CCSR, **Bella, Chen, Al-Bayati** – STRL) and ERCs (**Vickers and Greenfield** – CCI, **Passow** – DIGITS). Professor **Murtagh** has been appointed as the new Head of the School. The School is therefore committed to maintaining our research capability by recruiting high quality researchers at every stage of their career. The School continues to focus on publishing in journals of the highest international repute and the facilitation of technology transfer.

The School has continued with its commitment to multidisciplinary research under the creative technologies theme, as evidenced by the creation of the Virtual Reality Assisted Living (ViRAL) Special Interest Group. Other research themes that have developed during the current census period are: evolutionary dynamic optimisation; bio-health informatics; security of systems; policy management and analysis; auto-stereoscopic displays and eye tracking technologies; autonomous hybrid systems; high-order ITL (Interval Temporal Logic) typed-transformation theory for software migration; air combat simulations for autonomous vehicles; fuzzy consensus support systems; geometric approaches to type 2 fuzzy logic; software development impact.

The vision for research in the School of Computer Science and Informatics is informed by and reflects that of the Faculty and the University, namely “to place research excellence and innovation at the heart of our mission”. Research and scholarship is embedded into the School, as reflected in the School’s strategic plan. There has been considerable stability in the main strategic aims for research over a number of years. The School continues with its main aim to advance both the depth and breadth of its research. In 2013, DMU celebrates 50 years of computer science research.

The School is research rich with a number of long established research-intensive centres of world leading quality:

CCI conducts application driven basic research in the three fundamental components of computational intelligence – evolutionary computation, fuzzy logic, and artificial neural networks. Theoretical developments within the Centre include evolutionary dynamic optimisation, type-2 fuzzy logic, fuzzy preference modelling and grey systems. The CCI future research plan aims to ensure a solid foundation by enhancing the quality of its research and to follow this through to impact rich

applications, supported by a diverse funding portfolio.

CSC focuses on the application of theory and best practice to real-world challenges in cyber space and the digital economy. Future research aims to take novel and innovative ideas from proof of concept to exploitable product development in collaboration with academic and industrial partners, by combining cyber psychology, history, linguistics and other disciplines with computer science.

CCSR undertakes research and provides advice to individuals, communities, organisations and governments on the actual and potential impacts of computing and related technologies on society and its citizens. Its nationally and internationally funded research focuses on the principles of responsible research and innovation and underpins related policy development. The CCSR future research plan aims to provide national and international leadership for research on Computing and Social Responsibility by conducting interdisciplinary and collaborative research in the field.

DIGITS is dedicated to carrying out research and developing programmes that will progress the introduction of sustainable urban and regional transport policies across the European Union and internationally. Future research strategy aims to work in partnership with industry, transport service providers, government, other research institutes and communities to provide answers to technological, economic and societal questions around sustainability and modal change.

IDRG is concerned primarily with advanced stereoscopic, auto stereoscopic display systems and holography for consumer and industrial use. This involves the design, development, application and characterisation of such displays as well as investigation of their associated human factors. This work encompasses a wide variety of application domains including computer graphics, virtual reality and telepresence, although the current and future focus is multiple viewer head-tracked 3DTV systems.

STRL focuses on the study, analysis and advancement of formal approaches to the specification, design and (re-)engineering of computing systems with emphasis being placed on those which are used in (distributed) real-time, safety critical and high-integrity applications. The Centre is one of the leading national and international sources of expertise on the development of provably correct computer systems methods and tools. In future, particular emphasis will be placed on specific issues, which include, but are not limited to: real-time provision and model checker for Calculus of Context-Aware (CCA), the design of secure systems from vulnerable components and unifying theory for the Semantic Web – the next generation of Description Logics.

The School continues to maintain a dynamic and pervasive research environment, which is supported by a robust research infrastructure (see section d) and encourages a scholarly culture where staff undertake ambitious, innovative and rigorous research with impact on the wider society, as discussed in sections b and c of the impact template. As mentioned above, multi and inter-disciplinary research is also strongly encouraged and supported, as evidenced by the research collaboration between STRL, CSC and CCSR: STRL concentrates on the low-TRL (Technology Readiness Level), formal research into aspects of security and forensics, CSC focuses on higher TRL research, and CCSR concentrates on the ethical and social aspects of cyber security. By combining groups as part of a multidisciplinary hub and by developing links to other groups and individual researchers, a closely meshed network of research activity is formed that allows for cross-disciplinary work whilst taking into account the need for researchers to be grouped, focused and to maintain critical mass. The overall strategy is to create both a physical and a virtual centre of excellence by fostering links within and between universities. We have undertaken initial discussions with the University of Leicester, Loughborough University and EADS about potential future collaborations that focus on security, intelligence and resilience, which are complementary to the CSC, STRL and CCSR. CCSR has extensive and fruitful relationships with other research groups in DMU (notably with the CCI) that has led to several publications, the STRL with shared PhD supervision and the IESD through several collaborative funding bids.

Staff within the School are pro-actively supported and mentored in their research activities, with a specific mentoring scheme in place to support early career researchers (ECRs). Research groups hold devolved budgets, with autonomy in their administration, based on research plans and performance. These plans have annual targets and are monitored on a regular basis. They include forecasts regarding the number of research outputs together with their proposed outlets, external income generation activities, research student recruitment and completion rates, etc.

The School is continually working to increase the research profile of the unit both nationally and internationally. To this end, we actively support and engage with our local community through knowledge exchange, collaboration and partnership, and with major industrial partners to identify and develop collaborative opportunities to promote research, technology and education. We work with high quality international organisations and universities to develop strategic links to facilitate research collaborations.

Thus, since RAE 2008 the School has consolidated our research groups to provide highly sustainable groupings, better support for ECRs, improve succession planning and provide a better culture for PGR students. The recent development of Doctoral Training Programmes (DTPs) within the School (2013) will also enhance critical mass and build a better holistic experience for our PhD cohorts, as described in section c below. Our ongoing commitment to achieving a high level of distinction in research and scholarly activity has been recognised by the University in the promotion of the following staff within the present census period: **Stahl, Chiclana**, **Neri** and **Hall** were awarded both Readerships and subsequently Professorial Chairs, whilst **Ayesh**, **McBride**, **Ward**, **Y Yang**, **Elizondo** and **Ahmadi** have been awarded Readerships.

c. People, including:

1. **Staffing strategy and staff development.**

The research strategy for the School has its researchers at its heart. At a time of unprecedented changes in Higher Education, the School delivers its vision and mission through strong leadership, meaningful engagement and the development of a high performance culture where researchers are supported to deliver excellence in research with confidence. To be able to respond to the changing demands of the marketplace, our staffing strategy has been addressed using the following headings:

Recruitment – Research forms an essential element of all recruitment opportunities. All recruited members of staff are research active and already undertake research that aligns to, complements and extends our existing research strengths (details given in section b). We have made 6 junior appointments, 6 mid-career appointments and 5 senior appointments since Jan 2008, including **Murtagh,** as Head of the School, and formal recognition of the invaluable contribution made to the School by two long-term international partners, **Herrera-Viedma (Spain)** and **Hendler (USA)**.

Mentoring – Over the census period, the implementation of consistent support and mentoring for staff in research and capacity building activities has been an effective mechanism to successfully build upon research excellence. A mentoring process has been introduced that enables established researchers to take advantage of more effective opportunities to engage in research, while also being able to assist ECRs. A new ECR Fellowship Programme (2 per year) was launched in summer 2013. It is estimated that 60% of staff in the School are involved in peer mentoring as either recipients or mentor (although the opportunity is open to all staff). ECRs are also given a light teaching load in their first academic year – typically at least 50% of their time is given for research and PhD supervision.

Researcher Development Support Programme – The School supports and develops research-active staff through Individual Research Plans and the use of associated research allowances to give time to undertake high quality research. Additionally, all staff within the School are offered a variety of competitive research support to help them develop their research careers. Among these we have: (a) Higher Education Innovation Funding (HEIF) to support and develop a broad range of knowledge exchange activities between universities and the wider world, which result in economic and social benefits to the UK (since 2011); (b) Research Investment Fund (RIF) to support new initiatives to build our research capacity, performance and reputation (since 2010); (c) DMU-wide Research Leave Scheme (since 2011) and a FoT Research Leave Scheme (since 2012); (d) PhD Scholarships (full bursary and fees only); (e) the VC's Future Research Leaders Programme to raise the strategic research competence of a cohort of selected 'future research leaders' within the University by equipping them with the skills and the sense of responsibility to act subsequently as champions and inspirations of research in their own research groups, departments, schools and faculties (**Neri** and **Janicke** were selected from the School to participate in this initiative in 2012/13); (f) Regular FoT Research Away Days (since 2012) to allow staff to meet colleagues in the School to encourage internal new research collaboration activities and links.

DMU is fully committed to the principles of the 2008 Concordat to support the development of

researchers, and this is being incorporated into the School's plans at the research group level. Faculty Staff Development funding provides internal funding to attend high quality conferences. DMU has been recognised for its commitment to the advancement of the careers of women in science, engineering and technology (SET) and has been awarded membership of the Athena Swan Charter. The School will work to improve gender balance in research.

External Fellowships – The School encourages and supports staff to apply for prestigious external fellowships and research awards, and to support them in seeking to obtain qualifications that demonstrate international excellence in research. **Ward** was awarded a Royal Society Industry Fellowship (2009); **Neri** was awarded the Academy of Finland Research Fellowship (2009). **Yuan** has been awarded a Leverhulme Trust Visiting Fellowship from Sept 2013–Sept 2014 to work with **Y Yang** on Grey Systems.

Visiting Scholars – The School supports and encourages research groups to attract and host research visitors. The CCI, CCSR and STRL research groups have highly regarded Visiting Profs (**John, Mendel, Gotterbarn, Bynum**) working closely with the staff members of these groups. The CCI and DIGITS have implemented a research visit scheme for young EU researchers that allows them to benefit from our research expertise and to obtain the PhD European accreditation from the HEIs in their country of origin. Following our formal invitation to conduct research collaboration at DMU, some international researchers are awarded research scholarships in their country of origin to work at DMU: **Wu** (China) (Oct 2012–Oct 2013) and **Derrac** (Spain, currently in Cardiff Univ. UK) (July–Sept 2012) both worked with **Chiclana**; **Chartier** (Canada) (Sept–Oct 2011), and **Fleischman** (USA) (Sept 2011) collaborated with the CCSR.

Research Leave Scheme – In order for the School to become a location of choice for staff at all career stages it is vitally important that research talent is nurtured, recognised and rewarded. The School encourages and supports researchers committed to achieving a high level of distinction in research and scholarly activity to seek the recognition by the University. The following researchers were granted research leave as part of the central competitive leave scheme, since its inception in 2011; **Istance** (in academic year 2011/12); **Y Yang** (in 2012/13); **McBride**, **Wilford**, **Picinali** and **Ahmadi** (in 2013/14).

2. Research students

Between 1 Jan 2008 and 31 July 2013, 99 students from the School were awarded a PhD with a mix of self-funding, DMU bursaries and grant funding. Their geographical distribution is: 12% from the UK; 12% from the EU; and 76% from overseas**.**

All research students are subject to the oversight and monitoring of the University's Graduate School. At faculty level PhD students are accepted on to Doctoral Training Programmes (DTPs) based on the calibre and area of interest of the student. The School covers three programmes: DTP in Intelligent Systems, DTP in Information Society and DTP in Cyber Security. All three DTPs provide PhD students with high quality accommodation in dedicated research laboratories as well as bursaries from endowment funds for travel to and attendance of conferences.

We recruit a number of students from our master's programmes. We also advertise potential ideas for doctoral study via our website, attracting interest from a diverse range of people. The recruitment of PhD students within the School benefits from the creation in 2013 of the High Flyers PhD Scholarships Scheme that aims to encourage the retention of our highest quality students to study for their PhD. PhD applicants are interviewed and aligned to a research group working in the area of interest. Applications are accepted after scrutiny from the Faculty Head of Research Students and the Head of School to ensure academic standards are maintained and that sufficient resources are available to supervise a student.

All PhD students enrolled with the School are offered a DMU Researcher Development Programme (RDP). There are a number of rigorous procedures to maintain and improve quality, including: regular progress meetings between research students and supervisors; an online monthly progress report must be completed by the student and signed off by a member of the Supervisory Team; the Faculty Head of Research Students reviews the progress of the research students and checks that regular discussions between supervisors and their students have been taking place; progress is subject to a positive formal annual review by the supervisory team and at least one researcher is independent of the supervisory team.

d. Income, infrastructure and facilities

During the census period, members of the School have received major funding from the EPSRC, ESRC – DSR**,** Royal Society, Leverhulme Trust, Technology Strategy Board (TSB), East Midlands Development Agency (EMDA), Lachesis Fund, EU FP7, European Space Agency (ESA) and CIGREF (an association of 130 French companies and organisations from all sectors). Commercial clients include Network Rail, East Midlands Airport, Rolls-Royce, Boots, Centrica Plc, Jacob's Biscuits, Ringtrack, Thales, Thurlox Lighting, Mo-Tech, Hemsley Fraser/MBDA, Costain Ltd, Squid Soup, Stoneballs Company Ltd, Intamac Systems Limited, CY4OR, CPNI, IMIS, Learning Tree, Leicester City Council and Saudi Arabian Embassy.

External research income to the Unit in the present REF census period (5 years) represents an increase of 28% with respect to the previous RAE census period (7 years). Key research projects awarded within the current census period are:

EPSRC

- Evolutionary Computation for Dynamic Optimisation in Network Environments – S Yang (PI) – CCI. £445,069. 02/2013–02/2017.
- FRRIICT: Framework for Ethics in ICT– Stahl (CI) – CCSR [Jirotka PI – University of Oxford]. £397,172. 09/2011 – 03/2014.

ESA

- iTRAQ: Integrated Traffic and Air Quality Management using Space Services – Elizondo (PI) [coordinator Astrium] – DIGITS. £85,000. 2011–2012.

EU

- HELIUM3D: High Efficiency Laser-Based Multi-User Multi-Modal 3D Display – Sexton (DMU coordinator) – IDRG. €4.2m. Consortium of 8 partners. 01/2008–06/2011.
- ETICA: Ethical Issues of Emerging ICT Applications – Stahl (DMU coordinator) – CCSR. €834,000. Consortium of 10 partners. 04/2009–05/2011.
- CONSIDER: Civil Society Organisations in Designing Research Governance – Stahl (coordinator) – CCSR. €1,499,381. Consortium of 8 partners. 02/2012–01/2015.
- GREAT: Governance of Responsible Innovation – Stahl (DMU partner) – CCSR [coordinator – University of Namur, Belgium]. €1,780,571. Consortium of 7 partners. 02/2013–01/2016.
- THE-ISSUE: Traffic – Health – Environment. Intelligent Solutions Sustaining Urban Economies – Prof Goodyer (DMU partner) – DIGITS [coordinator Leicester City Council]. €2.65m. Consortium of 8 partners. 12/2011–11/2013.
- Responsibility – Fairweather (PI) – CCSR. £123,272. 02/2013–01/2016
- Human Brain Project – Stahl (DMU partner) – CCSR. FET Flagship project with a Consortium of 80 partners. £146,881. 10/2013–09/2022.

Lachesis Fund

- VenueSim – Modelling Customer Behaviour in Large Venues – Gongora (PI) – CCI. £225,000. 12/2008–12/2013.

Royal Society

- An Industrial Strength Software Reengineering Approach – Royal Society Industry Fellowship – Ward (PI) – STRL. £102,130. 2010–2014.

TSB

- KTP/Ringtrack: Vehicle Tracking and Asset Recovery – Goodyer (PI) – DIGITS. £117,032. 06/2013–06/2015.
- KTP – Nexor Limited – Watson (PI) – CSC. £118,907. 09/2013–09/2015

Chiclana, Elizondo, Coupland,Ayesh have received support from **the Royal Academy of Engineering** international travel grant scheme.

University investment and policies to support the research environment

Over the census period, DMU has invested heavily in central support for research. The Research, Business and Innovation Office (**RBI**) was created in 2009. It brings together research support in the form of specialist help with grant applications from expert advisers for research-council, EU and knowledge transfer funding opportunities, and post-bid support with grant management. The RBI also has a major role in monitoring the institution's research activity and helping research groups promote themselves externally, e.g. through web pages and events.

A Research and Innovation Office within the Faculty supplements this university provision. A team of research administrators works closely with the Head of Research and have a major role in developing industry contacts into opportunities for research and commercial income, the preparation of costing for research bids, the organisation of research events and other administrative tasks. The RBI administers several annual research support funds from which the School researchers have benefited, notably **RIF, HEIF, and RCIF**; this typically supports new initiatives to build our research capacity, performance and reputation such as "the establishment of DIGITS as a research group" (RIF), projects that could lead to the development of new funding and income sources for research and innovation activities such as the "Medical and Industrial Applications of Multi-Exposure Imaging on Portable, Cost-effective Programmable Cameras" (HEIF), and capital investment for the purchase of research equipment (RCIF).

Our research staff also benefit from the RBI's comprehensive staff development programme aimed particularly at ECRs. This covers, e.g., grant applications, writing for journals, and impact.
Over the census period, doctoral support (section c) has been rationalised through a Graduate School (set up in 2009). This has taken on a more strategic role with the development of the DTPs across the University, as well as having administrative responsibilities for research students.

The Future Research Leaders Programme, as discussed in section c and introduced in 2012, provides intensive mentoring and project development for a small number of University researchers under the guidance of **Prof Tony Payne** (University of Sheffield).

The School recognises that the balance between scholarly, organisational and operational elements of the research infrastructure is dynamic, depending on the requirements of the unit within the census period. Over the last two years of the census period, the organisational element has taken priority, with resources being diverted towards new appointments and investment in research funding. However, in the first three years of the census period the School **invested significantly in operational elements**, for example: a state of the art Game Development Studios bringing together the latest technology for playing and developing games on a range of platforms; dedicated Cyber Security Research Labs, developed with industry partners, which are amongst the best equipped facilities of this type in the UK. The relationship between these three elements is kept under constant review through School and Faculty level Research Committees, and responds to initiatives such as the University's Strategic Research Plan, designed to ensure that areas of research excellence continue to receive investment and funding.

e. Collaboration or contribution to the discipline or research base

Collaboration with national and international academic, industry and other bodies is a key element in the School research strategy as part of our aim to promote research, technology and education and increase our research profile and the level of impact of our research on the wider society. The School's research groups have maintained strong and lasting external research collaborations during the REF census period (with joint research grants and research publications), as well as developing new links with key influential research organisations. For example:

CCI's main research collaboration partners are: Rail Safety and Standards Board (RSSB), Network Rail, East Midlands Airport, Northrop Grumman, Brunel University, Uniersity of Nottingham, University of Birmingham and Swansea University (UK); University of Tampere, University of Jyväskylä (Finland); University of Missouri (USA); Northeastern University, Zhejiang Normal University (China); and computational intelligence research groups from various Spanish HEIs: Granada, Jaen, Barcelona.

CCSR main national links include the Universities of Loughborough, Oxford, Southampton, Middlesex and University College London. At European level: the Universities of Namur, Lille, Greifswald; Karlsruhe Institute of Technology; Technical U. Delft; Technical U. Berlin, and Linköping University.

DIGITS has collaborated with Northamptonshire County Council, Leicestershire County Council, Leicester City Council, University of Leicester, University of Nottingham, Astrium, Transport Research Laboratory (UK); Centre D'études Techniques de L'équipement du Sud Ouest, Aerospace Valley (France); University College Dublin (Ireland); Universita Degli Studi del Molise (Italy); Riga Technical Uni (Latvia); Instytut Kolejnictwa (Poland).

IDRG worked on collaborative projects with the following key stakeholders: TU Eindhoven

(Netherlands); KU Leuven (Belgium); KoC University (Turkey); University College London (UK); Nanjing Uni (China); Philips Consumer Electronics; Sharp Laboratories of Europe; Biotronics 3D; Light Blue Optics; Fraunhofer HHI; Microsharp; and Barco.

STRL collaborates with various national and international academic institutions, including: Cambridge, Nottingham, Oxford, Royal Holloway, Queen Mary, Leicester, Loughborough, Newcastle, York, Sheffield, Brunel, Yale, Stanford, Rensselaer Polytechnic Institute, University of Luxembourg, University of Applied Sciences Ingolstadt, University of Applied Sciences Emden, Penn State University, IIST (Macau), Technical University of Moscow, Humboldt University, Dalian University of Technology, University of Bahrain (ASU) and University of Jordan. Industrial partners include: BAE Systems, BT, General Dynamics, QinetiQ and European Aeronautic Defence and Space Company (EADS), Software Migration Limited.

Additionally, the School has developed **strategic relationships** with Hewlett-Packard (HP) to work collaboratively to design, develop and deliver a series of innovative educational programmes to better connect academia and business, as well as to start research collaboration in cloud, information security, networking and sustainability technologies.

Research conducted within the School has been the recipient of the following **awards**:

IEEE Computational Intelligence Society Video Award 2012 for explaining fuzzy logic to the 'man on the street'.
IEEE Transactions on Fuzzy Systems (TFS) Outstanding Paper Award – bestowed in **2010** for the paper: "Geometric Type-1 and Type-2 Fuzzy Logic Systems" IEEE TFS, 15, 3–15, 2007.
2009 Best Paper Award in the 9th Int Conf on Intelligent Systems Design and Applications (ISDA09) for the research paper: S Alonso, I J Perez, E Herrera-Viedma, FJ Cabrerizo. Consensus with Linguistic Preferences in Web 2.0 Communities.
Greenfield was a **Finalist in the Anita Borg Scholarships 2010** for the Greenfield-Chiclana Collapsing Defuzzifier.
BCS Machine Intelligence Competition Winner 2008 (Pro Evolutionary Soccer – Rhodes and **Coupland**) **and 2009** (Fly by Ear – **Passow** and **Gongora**) for live demonstrations of applications that show 'progress towards machine intelligence'.

Interdisciplinary research is supported and encouraged by the School, as evidenced by:
CCI work with the Faculty of Arts, Design and Humanities at DMU on Games Programming with Games Design developing the Game Alliance Middle England (**GAME**) initiative to build links between and promote the interests of the games industry in Central England and DMU.

CCI work with the Institute of Creative Technologies at DMU on the Virtual Romans Project to explore the potential for creative technologies to increase our understanding of life in Roman Leicester (Ratae Corieltauvorum) in A.D. 1 to 4. The project has been funded by: Leicester City Council Arts and Museums Service, DMU and the University of Leicester.

Seker developed an expert system for the detection of melanoma (funded by Hope Against Cancer) with researchers from the Faculty of Health and Life Sciences at DMU.

Murtagh's work has included image and signal processing, especially in astronomy, with a strong collaboration over many years with CEA Saclay, France. This collaboration has included conference organisation (the ADA, Astronomical Data Analysis, Conference series), book publishing, and commercialization of software (Multi Resolutions Ltd). Prof Murtagh has also been engaged in text processing with application to filmscript and literature, with an ongoing deep collaboration with Adam Ganz, Department of Media Arts, Royal Holloway, University of London (RHUL). He continues his membership of Computer Learning Research Centre (CLRC) in RHUL.

Broader contributions to the discipline include membership of disciplinary and professional bodies and networks, journal editorships, peer reviewing etc. For example:

Murtagh is Editor-in-Chief (EiC) of the Computer Journal (2000–2007, 2012-). He is a Member of the Editorial Board (MEB) of a number of other journals including Pattern Recognition, Journal of Classification and Neurocomputing. He was Programme Chair (PC) of the International Classification Conference 2011. As Président d'honneur, he delivered the keynote at the 13th French Conference on Knowledge Extraction and Management 2013 in Toulouse. He is a member of UKCRC, and served on its Executive 2008–2011. In 2011, he was elected to membership in Academia Europaea. He serves on the EPSRC College and is a member of the Panel of Advisors,

(2011–2014), for the Commonwealth Scholarship Commission. He is a Fellow of the British Computer Society. He was President of the British Classification Society, 2007–2010 (now Secretary), and was President of the Classification Society of North America (now reverted to its original name, the Classification Society), 2008–2009.

Chiclana is Associate Editor (AE) of J of Intelligent and Fuzzy Systems (since 2012), J of Multiple-Valued Logic and Soft Computing (since 2011), and MEB of Soft Computing (since 2012). He was a plenary speaker at the 2009 EUROFUSE2009. Chiclana has served as reviewer for the EPSRC (2011), The Royal Society (2011), The Research Foundation – Flanders (Belgium) (2012), the Romanian National Council for Development and Innovation (2012, 2013) and Portuguese Foundation for Science and Technology (2012).

Herrera-Viedma is PC of the 1st Int Conf on Information Technology and Quantitative Management 2013. He is AE of Information Sciences, Soft Computing, J of Intelligent and Fuzzy Systems, IEEE Trans on Systems, Man, and Cybernetics: Systems, and MEB of Fuzzy Sets and Systems, Int J of Information Technology and Decision Making, and Int J of Computational Intelligence Systems.

Elizondo was PC of the Workshop on Computational Intelligence (UKCI 2008). He is an IEEE Senior Member and AE for IEEE TNN & LS.

Janicke was PC of the ICS-CSR 2013 1st Int Symp for ICS & SCADA Cyber Security, as well as Track Chair of: ECIW 2012 European Conf on Information Warfare, Track Attribution, Attrition and Anti-Forensics; and SAC 2011, 2012 and 2013.

Neri received the Academy Research Fellowship from the Academy of Finland in 2009. He is Member of the Czech Science Foundation Panel for funding assignment (since 2012); Chair of the Task Force on Memetic Computing, Technical Committee on Emergent Technologies IEEE Computational Intelligence Society (since 2011); He is also MEB of Applied Intelligence, Springer (since 2012); Memetic Computing J, Springer (since 2007). He was awarded the Active Researcher Award from the Faculty of Information Technology, University of Jyväskylä, Finland.

Picinali is reviewer for the Royal Academy of Engineering Research Fellowship (2013) and the Art and Humanities Research Council (2012).

Seker was PC of the 2013 Int Conf on Applied Informatics for Health and Life Sciences. He is AE of IEEE Trans Information Technology in Biomedicine and MEB of ISRN Biomedical Engineering.

Sexton has acted as expert evaluator for IBBT-ICON (Belgian government) (2012), and was invited speaker at Content & Communications World, New York, October 2011.

Shaw is a member of the Faculty of Public Health (2011).

Stahl is a member of the EPSRC Peer Review College (since 2013). He is MEB of TripleC – J for a Global Sustainable Information Society (since 2012); Int Review of Information Ethics (since 2012); Int J of Cyber Ethics in Education (since 2005); J of Digital Forensics, Security and Law (since 2006); J of IS Education (since 2003). He is AE of IEEE Trans on Affective Computing (since 2010); and of Int J of Technology and Human Interaction (since 2009). Prof Stahl is a Fellow of the British Computer Society and Fellow of the Int Information Management Association (since 2005).

Ward was a Royal Society Industry Fellowship in 2009. He is MEB of the journal Conf. Papers in Computer Science (since 2010), and Chief Technical Officer for Software Migrations Ltd.

S Yang chairs the Task Force on Intelligent Network Systems (TF-INS), Intelligent Systems Applications Technical Committee, IEEE Computational Intelligence Society (since 2012) and the Task Force on Evolutionary Computation in Dynamic and Uncertain Environments, Evolutionary Computation Technical Committee, IEEE Computational Intelligence Society (since 2011). He is MEB of Evolutionary Computation (since 2012), Int J of Computational Science (since 2007), and AE of J of Information and Computing Science (since 2006).

Y Yang is AE of Int J Grey Systems: Theory and Applications (since 2011) and J of Grey Systems (since 2013). He is a Senior Member of IEEE and Co-chair of the Technical Committee on Grey Systems, IEEE Systems, Man, and Cybernetics Society (since 2012).