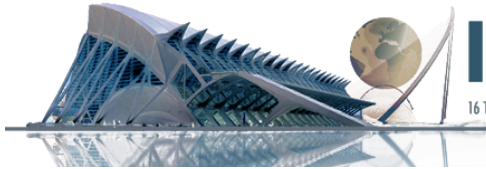# INTELLIGENT AND SEMANTIC WEB SYSTEMS

The aim of this track is to bring together state-of-the-art works on crisis information systems that exhibit some degree of intelligent behaviour. Intelligent systems have for many years now been at the forefront of empowering crisis managers, citizens and communities through advanced information systems.

 Providing adequate information management and decision support during a crisis situation makes exacting demands on the information systems employed. Acquiring, filtering, organizing, representing, reasoning with and distributing relevant information to the right stakeholders at the right time and in the right format is a challenging and complex task. Intelligent systems provide a way of managing this complexity, for example by transforming unstructured data into a structured form of actionable knowledge for decision support. Such systems may be deployed to help emergency responders to maintain community resilience, to enhance their preparedness, to manage the crisis or to implement the recovery.

Intelligent systems will display some ability to reason, perceive, learn or act intelligently in their environments; and they may have proactive, reactive, autonomous and/or social aspects. Techniques from Artificial Intelligence, the Semantic Web and associated domains may be employed to develop such robust and adaptable information management and decision support systems. This track welcomes contributions to the theory, methodology and practice of developing and evaluating intelligent systems in the context of crisis response and management.

TRACK TOPICS INCLUDE, but are not limited to

- *Intelligent context-aware modelling and processing*
- *Intelligent agents and distributed problem solving*
- *Rescue robotics and Humanitarian UAVs*
- *Case studies featuring the application of AI techniques*
- *Human-AI interaction and human-aware AI for crisis management*
- *Intelligent training systems*
- *Applications of the Semantic Web and linked data to crisis management*
- *Development and applications of ontologies and knowledge graphs for crisis management*
- *Intelligent user interfaces*
- *Smart cities and smart environments*
- *Agent based modeling and social simulation as a decision making tool*
- *Adaptive and self organizing systems*
- *Machine learning and deep learning applications*
- *Vision recognition*

- *Intelligent mapping*
- *Knowledge representation, discovery and reasoning*
- *Planning and scheduling*
- *Social intelligence*
- *Automatic negotiation of trust and analysis of provenance information*
- *Optimization and heuristics*
- *Intelligent behaviour in wireless sensor networks*
- *Applications based on blockchain and distributed ledgers technologies*

TRACK FORMAT

We intend to have two different aspects to the track organization during the conference. The first will be standard paper presentation to outline the state of the art in the field.

The second will focus on building networks and cross-disciplinary collaborations with a view to facilitating future work in the track. This will consist of themed discussion groups organised via Well Sorted (https://www.well-sorted.org). Attendees enter one or more topics of personal interest within the theme and then, once all topics are entered, sort them into what they believe are areas of overlapping interest. The system then creates themed groups. We will ask accepted authors to input their topics before the conference, and in the days leading up to and during the conference will promote this event to all conference attendees to give everyone with any interest in the theme a chance to participate and to increase awareness of and interest in the track. We hope this will be particularly useful to engage practitioners, students and others who may feel they don't have much to offer the theme from a technical point of view but have relevant views about the crisis domain challenges and can bring a broad scope to the discussions. The general discussions within the themed groups will focus on: 1) how can intelligent systems improve crisis management?, and 2) what are the potential drawbacks and ethical issues of using intelligent and automated systems? More specific themes will emerge during the grouping process.

SUBMISSIONS AND IMPORTANT DATES

We accept both core research (CoRe) papers and work in progress (WiPe) papers. CoRe papers should be 4000-8000 words and WiPe papers should be 3000-6000 words. Unsuccessful papers may, if judged to have sufficient relevance, be accepted as posters, and unsuccessful CoRe papers may, if appropriate, be invited to resubmit as WiPe papers.

TRACK CO-CHAIRS

Julie Dugdale

UNIVERSITY GRENOBLE ALPS, FRANCE

Julie Dugdale is an Associate Professor at University Grenoble Alps, France and leader of the MAGMA Multi-Agent Systems research team, part of the Grenoble Informatics Laboratory (LIG). She is also been an Adjunct Full Professor at the University of Agder, Norway where she worked in the Centre for Integrated Emergency Management (CIEM). She also serves on the IFIP Domain Committee on IT in Disaster Risk Reduction. She was awarded her HDR (habilitation) from University Joseph Fourrier in 2013, concerning « Human behaviour modelling in complex socio-technical systems – an agent based approach ». She obtained her PhD in 1994 from the University of Buckingham, UK. She came to France 1998 from an Associate Professor post at De Montfort University, UK. Before joining the MAGMA team in 2006, she worked for 3 years in the Human-Machine Interaction team at LIG, and for 5 years in a Cognitive Engineering Team at Computer Science Research Institute in Toulouse.

Her work concerns human behaviour modelling and simulation of crisis and emergency situations. She has been involved in the area of emergency and crisis management since 1998 and over the years has published over 100 articles on this topic. She is also an editorial board member of several journals concerning agent technologies, information systems and crisis management, and artificial intelligence. She takes a strong multi-disciplinary approach to her work, merging the social sciences (cognition, geography, sociology) with her primary domain of computer science. This is in addition to working closely with crisis managers and practitioners.

She became involved with the ISCRAM community since its inception in 2004. Since then she has been heavily engaged with the ISCRAM community: Chair/Co-Chair of the ISCRAM Doctoral Colloquium 2007, 2009, 2012; Co-Chair of the Intelligent Systems ISCRAM track 2007, 2008, 2008, 2012, 2013, and other 2 other tracks in 2005, 2006; ISCRAM Program Chair 2011, Lisbon, Portugal; Conference Co-Chair ISCRAM Med 2015, 2016, 2017; In 2010 she was very proud to receive the ISCRAM Distinguished Service Award for outstanding support to the ISCRAM Community. In 2011 she was elected to the ISCRAM Board of Directors, then she became ISCRAM Vice President and finally ISCRAM President; a role which she served until 2017.
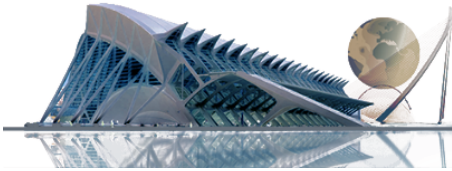
Fiona McNeill

HERIOT-WATT UNIVERSITY, UK

Fiona McNeill is a Lecturer in Computer Science at Heriot-Watt University, focussing on automated knowledge evolution and interpreting data mismatch.

She is especially interested in the applications of these ideas to emergency response situations, where timely, efficient exchange of pertinent data between a large number of disparate organisations is essential. She has initiated a series of workshops to develop links between emergency responders, government, industry and academia.

She is also involved with efforts to address female under-representation in science, starting at school level.

Working Groups: Computing in Schools; Excellence in Education; Industry Working Group; Open Data.

Francisco José Quesada Real

UNIVERSITY OF EDINBURGH, UK

Francisco José Quesada Real is PhD student at the University of Edinburgh, focussing on tackling semantic interoperability problems in emergency response scenarios and the medical domain.

He holds a Bachelor and Master degrees in Computer Science and he was a Marie Curie Early Stage Researcher in the European project "Evolution of Shared Semantics in Computational Environment" (ESSENCE).

He belongs to ISCRAM, CISA and the DReaM group.

Hemant Purohit

GEORGE MASON UNIVERSITY, USA

Dr. Purohit is passionate about researching online human behavior for social problems. He has extensively collaborated with experts in cognitive science, and humanitarian technologies globally, while working on cooperative systems for efficiently connecting citizens and organizations to improve crisis coordination. It also led him to prestigious 2014 ITU Young Innovator fellowship from the UN's ICT agency.

Dr. Purohit earned an integrated M.S. and Ph.D. in Computer Science and Engineering at Wright State University, USA, and a B.Tech. in Communication and Computer Engineering at The LNMIIT, India.

His research interests include Social Computing, Intent Mining, and Natural Language Understanding, with a focus on designing systems for community resilience against natural crises (e.g., hurricanes), societal crises (e.g., migration, violence), and human crises (e.g., terrorism, cyber attacks).