

 PG Net

2009

PROGRAMME

*10th
Anniversary*

The 10th Annual PostGraduate Symposium on
**The Convergence of
Telecommunications, Networking & Broadcasting**

22-23 June 2009

Holiday Inn, Liverpool City Centre,

Liverpool, U.K.

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Welcome to our 10th anniversary celebration of PGNet.

Through its continued success, PGNet has become the annual gathering of the UK research students communities working in the areas of telecommunications, networking and broadcasting. It enables the exchange of ideas and experiences which provides much needed training and preparation for the future. We are pleased to once again see that our research community is strongly represented with a large number of papers as a result of collaborations between 112 researchers from 22 universities and research institutions.

PGNet is well attended by researchers and industrialists and therefore provides the crucial feedback mechanisms required for the development of research and young researchers. An important benefit that accrues out of such a gathering is the cross fertilisation between the different disciplines and mix of experiences and interests that will lead to the development of a “network of people”. This year we are expected to welcome a total of 120 delegates, including, research students, academics, industrialists and practitioners.

PGNet attracts students from diverse communities such as computing and electronic engineering, telecommunications and computer networks, multimedia contents and multimedia computing, to enable a close harmonised interaction and knowledge transfer between these communities. The benefit of such interaction is enormous, in reducing the replication of efforts, as well as enabling the reuse of techniques and methodologies across these communities. This year the programme is represented by 12 subject areas including, wireless communications, ubiquitous and mobile computing, sensor networks, and security. We hope that you will find the programme fruitful and thoroughly interesting.

On behalf of the steering committee, I would like to thank our sponsors for their generous support, the keynote speakers and session chairs for their time and effort, and the authors for their contribution to an excellent programme.

Finally, I would like to thank my colleagues in the local organising committee for all their hard work in helping to make this event a success.

We hope that you enjoy our 10th anniversary and have a great time in Liverpool.

Madjid Merabti

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Madjid Merabti

Liverpool John Moores University

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KEYNOTE SPEECH

Continua Health Alliance – The Impact of a Personal Telehealth Ecosystem

Johan Muskens

Philips Research Europe, Eindhoven, The Netherlands

Currently, Johan is a scientist at Philips Research Europe in the area of healthcare systems architecture. From a technology perspective, he supports Philips businesses in medium-to-long term growth opportunities. In scope are applications and services for remote patient management and personal and consumer healthcare. In this context, he has been participating in the Continua Health Alliance Technical WG. As a chair of the end-to-end architecture sub-team, he has been focusing on the impact of new use cases on the overarching and longer-term architectural aspects of the Continua interoperability framework. In parallel to these activities Johan works on projects searching for new personal disease management concepts.

Previously, Johan Muskens worked as a scientist in the area of component based middleware for high volume embedded devices that support robust and reliable operation, runtime upgrading and extension and component trading contributing to Philips corporate research programs, external research projects with European partners and standardization efforts in MPEG (Multi Media Middleware). Before his work at Philips Research, Johan worked as a scientist at Eindhoven University of Technology on the topics on predictable assembly of components and software architecture analysis.

Johan Muskens has an M.Sc. in Computing Science from the Eindhoven University of Technology. He lives in Eindhoven, The Netherlands and his hobbies include sailing, skiing and driving a motorbike.

DAY 1 – MONDAY, 22ND JUNE 2009

REGISTRATION	09:30 – 12:00
LUNCH	12:00 – 13:00
WELCOME ADDRESS	
<p>Professor Michael Brown CBE DL <i>Vice Chancellor & Chief Executive of Liverpool John Moores University</i></p>	13:00 – 13:10
KEYNOTE SPEECH (Session Chair – Prof. David Parish, Loughborough University) <i>Main Theatre</i>	
<p>Johan Muskens , <i>Philips Research Europe, Eindhoven, The Netherlands</i> “Continua Health Alliance – The Impact of a Personal Telehealth Ecosystem”</p>	13:10 – 14:10
SESSION 1A – WIRELESS SENSOR NETWORKS I (Session Chair – Dr. Kashif Kifayat, Liverpool John Moores University) <i>Main Theatre</i>	
<p>Design Considerations for Fault Management in Wireless Sensor Networks Khan, M., Merabti, M., Askwith, B., <i>Liverpool John Moores University</i></p> <p>An Evaluation of Positioning System for Wireless Sensor Networks in an Indoor Environment Cao, D., Meng, F. Y., Goh, H. G., Kwong, K. H., Michie, C., Andonovic, I., <i>University of Strathclyde</i></p> <p>Network connectivity in Wireless Sensor Networks: a Survey Sultan, A., Merabti, M., Askwith, B., Kifayat, K., <i>Liverpool John Moores University</i></p> <p>SecRose: a Data Transportation Layer Security Mechanism for Wireless Sensor Networks Ekonomou, E., Booth, K., <i>University of Salford</i></p>	
SESSION 1B – UBIQUITOUS AND MOBILE COMPUTING I (Session Chair – Dr Adil Al-Yasiri, University of Salford) <i>Conference Room A</i>	
<p>Selecting a Data Centre Location Using an AHP-based Location Model McConnell A., Parr G. P., McClean S.I., <i>University of Ulster</i>; Khan, K., <i>BT Centre for Information and Security Research</i></p> <p>A 3D Visualiser and Controller for Networked Embedded Ubiquitous Devices Shaheed, A., Fergus, P., Kifayat, K., Abuelmaatti, O., Merabti, M., <i>Liverpool John Moores University</i></p> <p>Towards a New Context Representation, Maintenance and Discovery in Mobile Ad Hoc Networks Liu, Q., Linge, N., <i>University of Salford</i></p> <p>An Open Library System for Appliances Firmware Re-Composition Simchareon, S., Namman, C., Mingkhwan, A., <i>King Mongkut’s University of Technology North Bangkok, Thailand</i></p>	14:20 – 15:40
SESSION 1C – NETWORK SECURITY AND FORENSICS I (Session Chair – Dr. David Llewellyn Jones, Liverpool John Moores University) <i>Conference Room B</i>	
<p>Detection of Protocol Tunnelled Applications Using Packet Size Distributions Mujtaba, G., Parish, D., <i>Loughborough University</i></p> <p>Automating Evidence Extraction and Analysis for Digital Forensics Lempereur, B., Merabti, M., Shi, Q., <i>Liverpool John Moores University</i></p> <p>Combined Coding and Encryption for Future Communication Systems Rashwan, H., <i>Lancaster University</i></p> <p>A Survey of Security in the System-of-Systems Domain Drew, O., Shi, Q., Merabti, M., <i>Liverpool John Moores University</i></p>	
COFFEE BREAK	15:40 – 16:00

<p align="center">SESSION 2A – WIRELESS COMMUNICATIONS AND NETWORKING I (Session Chair – Dr Stewart Bryant, Cisco Systems) <i>Main Theatre</i></p>	
<p>Multi-level Threshold Handover for Homogeneous Wireless Mobile Networks Thumthawatworn, T., Pervez, A., <i>London South Bank University</i></p> <p>Performance Evaluation of a WiMAX Enabled HAPs-Satellite Hybrid System Mohammed, H., Pillai, P., <i>University of Bradford</i></p> <p>Study of the Atmospheric Turbulence in Free Space Optical Communications Ijaz, M., Wu, S., Fan, Z., Popoola, W. O., Ghassemlooy, Z., <i>Northumbria University</i></p> <p>NetSecure: A context aware based online security framework Deighan, C., Curran, K., Lunney, T., Mc Kevitt, P., <i>University of Ulster</i></p>	
<p align="center">SESSION 2B – NETWORKED INFORMATION SYSTEMS (Session Chair – Prof. Frankie Garcia, Agilent Technologies) <i>Conference Room A</i></p>	16:00 – 17:40
<p>A Study of Retrieval Algorithm for DDC-Multiple Relation Classification Content Lertmahakiat, W., Mingkhwan, A., <i>King Mongkut's University of Technology North Bangkok, Thailand</i></p> <p>An Evaluation of Semantic Matching Techniques Zhai, Y., <i>University of St Andrews</i></p> <p>Multiple Relation Knowledge Mapping Using Rectangular and Polar Coordinates Wathananon, J., Mingkhwan, A., <i>King Mongkut's University of Technology North Bangkok, Thailand</i></p> <p>Towards Multilevel Resilience for Future Networking Bruncak, R., Smith, P., Hutchison, D., Sterbenz, J., <i>Lancaster University</i></p> <p>A Study of Information Retrieval Algorithm for Multiple Relation Competency Team Recruitment Chintanaporn, P., <i>Burapha University, Thailand</i>; Mingkhwan, A., <i>King Mongkut's University of Technology North Bangkok, Thailand</i></p>	
<p>CONFERENCE TOUR AND DINNER</p> <p>Liverpool Town Hall</p> <p>Castle Street, Liverpool, L2 3SW</p>	19:00 prompt

DAY 2 – TUESDAY, 23RD JUNE 2009

TEA, COFFEE & BISCUITS	9:00 – 9:30
SESSION 3A – NETWORK SECURITY AND FORENSICS II (Session Chair – Dr. Bob Askwith, Liverpool John Moores University) <i>Main Theatre</i>	
<p>An Efficient Algorithm for Range and Fuzzy Match Queries over Encrypted Data in Relational Databases Ali, S., Rauf, A., Javed, H., Jan, Z., Waheed, S., Haleem, M., <i>University of Peshawar</i></p> <p>Forensic Analysis of Distributed Data in a Service Oriented Computing Platform Hegarty, R., Merabti, M., Shi, Q., Askwith, B., <i>Liverpool John Moores University</i></p> <p>Forensic Live Response and Event Reconstruction in Linux Systems Olajide, F., Savage, N., Ndzi, D., Al-Sinani, H., <i>University of Portsmouth</i></p> <p>User-Centred Identity Management in Mobile Ad-hoc Networks Arabo, A., Shi, Q., Merabti, M., <i>Liverpool John Moores University</i></p>	
SESSION 3B – NETWORK MANAGEMENT (Session Chair – Dr. Colin Allison, University of St Andrews) <i>Conference Room A</i>	
<p>Network Operator Independent Resilient Overlay for Mission Critical Applications Zhang, X., Phillips, C., <i>Queen Mary, University of London</i></p> <p>BARD: A Novel Application of Bayesian Reasoning for Proactive Network Management Bashar, A., Parr, G. P., McClean, S. I., Scotney, B. W., <i>Universit of Ulster</i>; Nauck, D., <i>Intelligent Systems Research Centre, BT Group</i></p> <p>Intelligent Network Monitoring Using a Connectionist Inference Model Gemikonakli, E., Gemikonakli, O., Bavan, S., <i>Middlesex University</i></p> <p>Real-Time Data Analytics in Support of Network Resource Management Protocols Moradpoor, N., Parr, G., McClean, S., Scotney, B., <i>University of Ulster</i>; Gilbert Owusu, <i>BT Adastral Park</i></p>	9:30 – 10:50
SESSION 3C – ROUTING PROTOCOLS (Session Chair – Dr. Paul Smith, Lancaster University) <i>Conference Room B</i>	
<p>Formal modelling and analysis of routing protocol security in wireless sensor networks Saghar, K., Henderson, W., Kendall, D., <i>Northumbria University</i></p> <p>A Priority Based Routing Protocol for Wireless Sensor Networks Andra, C., Kwong, K. H., Michie, C., Andonovic, I., <i>University of Strathclyde</i></p> <p>Investigation of MANET Routing Protocols for Mobility and Scalability Shrestha, A., Tekiner, F., <i>University of Central Lancashire</i></p> <p>A New Routing Protocol for MANET Jazyah, Y., Hope, M., <i>University of Salford</i></p>	
COFFEE BREAK	10:50 – 11:10

<p align="center">SESSION 4A – UBIQUITOUS AND MOBILE COMPUTING II (Session Chair – Dr. Cath Watts, SELEX Communications) <i>Main Theatre</i></p>	
<p>Simulating Autonomous Mobile Programs on Networks Chechina, N., King, P., Pooley, R., Trinder, P., <i>Heriot-Watt University</i></p> <p>Usability Metric Framework for Mobile Phone Application Hussain, A., Kutar, M., <i>University of Salford</i></p> <p>A Context-Aware Platform for Computer Assisted Healthcare Lee, K., Lunney, T., Curran, K., Santos, J., <i>University of Ulster</i></p> <p>A Generic Architecture Implementing a Formal Context Model for Context-Aware Systems Abdulahad, A., Al-Yasiri, A., <i>University of Salford</i></p>	
<p align="center">SESSION 4B – WIRELESS COMMUNICATIONS AND NETWORKING II (Session Chair – Dr. Kate Booth, University of Salford) <i>Conference Room A</i></p>	11:10 – 12:30
<p>Approaches to Modelling and Analysis for Performability Evaluation of Handoff Schemes in Wireless Cellular Networks Kirsal, Y., Gemikonakli, O., <i>Middlesex University</i></p> <p>A Novel Louvered Array Element Geometry & Spatial Filter/"Ray-Bending" Lens for a Low Profile Satellite Communications On-the-Move Hybrid Phased Array Antenna Jiang, Y., Foti, S., Sambell, A., <i>University of Northumbria</i></p> <p>Optimization of ICT Infrastructure and Energy-Efficiency Techniques in Next Generation Internet Abaci, H., Parr, G., McClean, S., Moore, A., <i>University of Ulster</i>; Saffre, F., <i>BT Adastral Park</i></p> <p>A Reputation Based Scheme to Deter Identity Based Attacks for Clustered MANETs Abbas, S., Merabti, M., Llewellyn-Jones, D., <i>Liverpool John Moores University</i></p>	
LUNCH	12:30 – 13:30

SESSION 5A – WIRELESS SENSOR NETWORKS II (Session Chair – Dr. Hala Mokhtar, Liverpool John Moores University) <i>Main Theatre</i>	
<p>Quality of Service Support for Multiple Traffic Types in Wireless Sensor Networks Ayyat, S., Al-Yasiri, A., <i>University of Salford</i></p> <p>A Hierarchically Structured Worldwide Sensor Web Incorporating IEEE 1451 Rhead, I., Merabti, M., Mokhtar, H., Fergus, P., <i>Liverpool John Moores University</i></p> <p>A Technique for Handline Multiple Queries for Wireless Queries for Wireless Sensor Network Javed, H., Waheed, S., Haleem, M., Ali, S., <i>University of Peshawar</i>; Merabti, M., Askwith, B., <i>Liverpool John Moores University</i></p> <p>Healthcare Sensor Networks and Services for the Medical Home Haroon, A., Fergus, P., Shaheed, A., Kifayat, K., Merabti, M., <i>Liverpool John Moores University</i></p>	13:30 – 14:50
SESSION 5B – EDUCATION, GAMING AND ENTERTAINMENT (Session Chair – Dr. Sud Sudirman, Liverpool John Moores University) <i>Conference Room A</i>	
<p>AmbiLearn: Ambient Intelligent Multimodal Learning Environment for Children Hyndman, J., Lunney, T., Mc Kevitt, P., <i>University of Ulster</i></p> <p>Recent Advances and Classification of Watermarking Techniques in Digital Images Song, C., Sudirman, S., Merabti, M., <i>Liverpool John Moores University</i></p> <p>Traffic Management for Multi-User Virtual Environments Oliver, I., Allison, C., Miller, A., <i>University of St Andrews</i></p> <p>Identifying Personal Memories and Shared Experience Using P2P Networks Ismail, A., Merabti, M., Llewellyn-Jones, D., Sudirman, S., <i>Liverpool John Moores University</i></p>	
COFFEE BREAK	14:50 – 15:00
CLOSING PANEL (Session Chair – Prof. Nigel Linge, University of Salford) <i>Main Theatre</i>	
"So what will the next 10 years bring?"	15:00 – 16:00