
Editorial

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Biographical notes: Rubem Pereira is a Reader in Networking and Multimedia, and has been involved in a number of research projects in relation to media streaming, communications protocol, performance analysis and evaluation and distributed systems. He has been awarded a number of research grants from the UK EPSRC research council and has participated in a network of excellence also funded by the EPSRC. He has published extensively in conferences and journals and is active in organising international workshops and symposia. He has ongoing collaborations with international partners in Taiwan, Japan, Brazil and the EU.

Ella G. Pereira is a Reader in Computing. Her research interests and expertise are on cloud computing, and distributed and mobile application development. She has growing interest and collaborative projects in e-health and the use of mobile technology in healthcare. She is also experimenting and defining requirements for real time video streaming using novel method for smoothed video data that significantly improves video streaming as a real time application. Her work has received recognition at national and international levels and resulted in publication of articles in conference proceedings and international journals.

Irfan Awan is a Professor of Computer Science and leads network security research area within the Network and Performance Engineering (NetPEn) research group. His research interests include network security, communication systems and performance modelling. He has chaired and organised various international conferences and workshops and is a technical program committee member of several international conferences. He has published over 250 research papers in reputable refereed international journals, books and refereed national and international conferences. He has also edited a number of special issues of international journals.

1 Introduction

The objective of this special issue of the *International Journal of Space-Based and Situated Computer* – Future internet: services and data management was to offer the opportunity for original research dissemination and directions being proposed for the future internet, including the services that are envisaged and the techniques for management, analysis and visualisation of big data.

This is a topic where a number of research fields are converging: The evolution of sensor networks and mobile devices, leading to the internet of things (IoT) paradigm, in

which smart objects blur the distinctions between the real and the virtual worlds; cloud computing, now a fairly mature model for the provision of computing-related services; big data management; and content delivery networks for high quality media. This exciting landscape offers many challenges, one of which is to bring together the various research areas for a common understanding of their interrelated issues.

This special issue will be of interest to academics and practitioners in topics related to the emerging infrastructures and services associated with the future internet, and the

growing body of professionals, both in industry and academia, working with techniques associated with big data in a wide range of applications and domains.

2 The papers

The articles selected for publication offer an interesting mix of standpoints in the landscape of the future internet.

The paper 'Using adaptive neural networks to provide self-healing autonomic software' offers a neural network-based solution to the important issue of self-healing software. Self-managing techniques will facilitate the design and implementation of software systems and applications, substantially reducing the need for human intervention for managing ever more complex software.

One of the salient aspects of the future internet will be security. A review of related issues regarding the IoT is presented in the paper 'Security challenges in the internet of things'. The paper presents the main components of the IoT

domain and classifies their security requirements. Open security problems are also presented and future directions for research in the area discussed. Another important aspect of the future internet in which security will continue to play an important part is cloud computing. One of the main obstacles with cloud computing is the natural questions that arise regarding the security of data and systems maintained by a public cloud. The paper 'Extrusion detection of illegal files in cloud-based systems' presents a tool for enhancing cloud security. Extrusion detection deals with the analysis of outbound connections and data leaving a public cloud to identify potential breaches of security. The solution presented is based on signature search for identifying breaches of security.

In 'Future internet: trends and challenges', the authors provide a detailed survey of the current developments in the areas of: the IoT, cloud computing and big data. The paper discusses the main technologies and directions in each area, and the points of intersection between them.