

Preface

The third Edition of the African Journal of Information and Communication Technology continues the tradition of selecting papers that have potential for significant impact and also satisfy the interest of its highly diverse readers. This issue presents papers in computing and the Internet. It has three major papers dealing with cryptography, service creation and protocols.

The first paper by Ahmed, Kalash and Allah applies cryptographic techniques for securing digital images. The authors have the "encryption quality of RC6 block cipher is investigated among its several design parameters such as word size, number of rounds, and secret key length and the optimal choices for the best values of such design parameters are given. Also, the security analysis of RC6 block cipher for digital images is investigated from strict cryptographic viewpoint. The security estimations of RC6 block cipher for digital images against brute-force, statistical, and differential attacks are explored". They tested the security of RC6 block cipher for digital images against various types of attacks. They concluded that "RC6 block cipher can be considered to be a real-time secure symmetric encryption for digital images".

Atanasov and Pencheva in the second paper present "a new mark-up approach to service creation in Next Generation Networks. The approach allows access to network functions exposed by open application programming interfaces. Based on ontology analysis of the application domain, language constructions are synthesized and formally defined". The paper develops language supporting tools.

Over the years, multiple enhancements to the Transport Control Protocol (TCP) have been published. Standard TCP semantics such as end-to-end flow control, congestion control mechanisms and error recovery provide reliability in wired networks. However, wireless communication systems have different characteristics when compared to wired networks that include higher bit error rates, higher latency, limited bandwidth, multipath fading of the signals and handoff. These differences in network characteristics often dictate enhancements to TCP. In this paper, Chandra and Harris propose an enhancement to TCP which improves upon conventional TCP when it is applied to the wireless environment. The results in the paper show significant improvements to TCP performance with respect to packet loss detection.

This Issue also contains an open call for papers on broadband IP communication and services including IPTV, Voice over IP (VoIP), worldwide interoperability of microwave access (WiMAX) and mobile broadband wireless access (MBWA). We commend this Issue to you.

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Johnson I Agbinya received his PhD in Electronic Engineering at La Trobe University in 1994 and subsequently joined Australia's premier research institute, Commonwealth Scientific and Industrial Research Organisation (CSIRO) as a Senior Research Scientist where he undertook research in biometrics, pattern recognition and signal processing. At CSIRO he developed patented speech recognition and face recognition systems. He joined Vodafone Australia in 2000 as a Principal Engineer responsible for its industrial research administration on mobile and wireless communication where he served as its sole representative in several international standard bodies and the Australian Telecommunication CRC Executive Committee. He also contributed to Vodafone Australia's preliminary design of 3G radio access network in the Emerging Technologies Group. He also represented Vodafone Australia in the Vodafone Research Group from where he was spotted and appointed as Adjunct Professor in 2002 at the Department of Computer Science, University of the Western Cape (UWC). He is a key member of the Telkom / Cisco Centre of Excellence in Internet Computing at UWC. Prof. Agbinya is currently a Faculty member in Information and Communication Group at the University of Technology, Sydney. His research interests are in wireless communications, sensor networks, digital identity management systems, networks on mobile platforms and in uncovered areas.

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H Anthony Chan received his PhD in physics at University of Maryland, College Park in 1982 and then continued post-doctoral research there in basic science. After joining the former AT&T Bell Labs in 1986, his work moved to industry-oriented research in areas of interconnection, electronic packaging, reliability, and assembly in manufacturing, and then moved again to network management, network architecture and standards for both wireless and wireline networks. He had designed the Wireless section of the year 2000 state-of-the-art Network Operation Center in AT&T. He was the AT&T delegate in several standards work groups under 3rd generation partnership program (3GPP). During 2001-2003, he was visiting Endowed Pinson Chair Professor in Networking at San Jose State University. In 2004, he joined University of Cape Town as professor in the Department of Electrical Engineering. Prof. Chan is Administrative Vice President of IEEE CPMT Society and had chaired or served numerous technical committees and conferences. He is distinguished speaker of IEEE CPMT Society and is in the speaker list of IEEE Reliability Society since 1997.

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