
Editorial

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Biographical Note: Isaac Woungang received his MASc and PhD, all in Applied Mathematics from the Université du Sud, Toulon-Var, Toulon, France, in 1990 and 1994 respectively. In 1999, he received a MASc from National Institute for Telecommunication Research, University of Quebec in Montreal, Canada. From 1999 to 2002, he worked as a Software Engineer at Nortel Networks, Ottawa, Canada. Since 2002, he has been with Ryerson University, where he is now an Assistant Professor of Computer Science. In 2004, he founded DABNEL (the Distributed Applications and Broadband Networks Laboratory) R&D group, hosted at Ryerson University. His research interests are telecommunications network design, control and management, network security and coding theory.

The last two decades have witnessed a rapid growth in research on coding and information theories. The *International Journal of Information and Coding Theory (IJCoT)* has been launched to provide a medium for researchers in these areas to publish state-of-the-art research results that significantly advances the study of information and coding theory, as well as their applications to cryptography, network security, network coding, computational complexity theory, communication networks and related scientific fields that make use of information and coding theory. The objective of *IJCoT* is to enable the international research community to help learn the research advancements in this area from each other's work.

IJCoT is initially planned to be released at the rate of four issues per year. We are pleased to launch this issue as the inaugural issue of the journal. In this issue, there are seven papers.

The first of these papers is titled, 'Signatures for network coding' and is authored by Charles, Jain and Lauter. The authors studied the problem of detecting pollution attacks in network coding schemes. The authors have proposed a novel digital signature scheme for use with network coding. The homomorphic property of the signatures allows nodes to sign any linear combination of the incoming packets without contacting the signing authority, allowing for the detection of malicious nodes that intentionally corrupt the content on the network. The authors have showed that their digital signature scheme is also capable of providing data authentication. The authors have also demonstrated the security of their signature scheme by means of some mathematical analysis.

The second paper in this series is titled, 'On non-existence of perfect and nearly perfect sequences' and is authored by Ma and Shean Ng. The authors have studied the complex p -ary perfect and nearly perfect sequences, where p is an odd prime. The authors have showed that the existence of such sequences is equivalent to the existence of certain types of difference sets. Several constructions showing the existence and non-existence of certain complex p -ary perfect sequences are also illustrated in depth.

The third paper in this series is titled, ‘Bias reduction via linear combination of nearest neighbour entropy estimators’ and is authored by Kaltchenko and Timofeeva. In this paper, the authors have proposed a new family of entropy estimators, constructed as a linear combination of the nearest neighbour estimators. The proposed family of entropy estimators is constructed by means of the properties of the nearest neighbour estimators for the class of the simplest Bernoulli measures. The authors have obtained a closed-form expression for the estimator’s bias. The authors have also showed that under certain conditions, a significant reduction of the estimator’s bias can be obtained by using a specific non-trivial selection of the coefficients in the proposed linear combination.

The fourth paper in this series is titled, ‘Codes from zero-divisors and units in group rings’ and is authored by Paul Hurley and Ted Hurley. The authors have proposed a new method of codes construction using encodings from group rings. In this construction, the authors have associated a group ring to a certain well-defined ring of matrices, allowing the matrix algebra to be used as a meant for constructing the new codes and their standard generators and parity-check matrices. The authors have showed that group rings are a fruitful source of units and zero-divisors from which new codes can be built. The proposed framework provides a basis to further develop and investigate this family of codes.

The fifth paper in this series is titled, ‘The use of genetic programming for adaptive text compression’ and is authored by Zaki and Sayed. The authors have proposed a modified genetic programming approach to solve the data compression problem. In the proposed algorithm, the authors have introduced three new operators that enable a candidate solution to be expressed as a tree rather than a bit string. To establish the efficiency of the proposed algorithm, the authors have showed that their algorithm can produce optimal codes.

The sixth paper in this series is titled, ‘On the classification of the codes obtained by subtracting from some ternary extremal self-dual codes’ and is authored by Horiguchi. The author has proposed a method for constructing extremal self-dual codes $[12m - 4, 6m - 2, 3m]$ codes from a ternary extremal self-dual $[12m, 6m, 3m + 3]$, where m is a positive integer. The author has also classified the generated codes against the currently known extremal self-dual codes of length $12m$, $m > 0$.

The last paper in this series is titled, ‘A new class of pseudo-random sequences from Mersenne numbers’ is authored by Mitra. The author has proposed a new class of pseudo-random sequences constructed from modulo-2 operations of two different maximal length sequences. The periods of these input sequences are Mersenne numbers. The author has demonstrated that the low correlation values of the output sequences have specific properties that make them suitable for use in multi-users interference suppression and communication security applications.

We hope that readers will enjoy reading these papers and find them valuable. The readers are encouraged to contact the authors, if they need any further clarification regarding their works presented.

Finally, we take this opportunity to express a few words of our thankfulness. First, we would like to thank all the authors for considering *IJCoT* as a medium for publishing their work. We are also very much thankful to the members of the Editorial Board for their support in planning the journal and reviewing several papers. Last, but not the least, we would like to thank the staff at Inderscience, including but not limited to, Dr. M.A. Dorgham and Mr. Jim Corlett, for the continuous support and assistance they have provided us in the pre-publication process.