Computer Science & Engineering Colloquia Series

A New Innovative Compression Scheme for Color Maps, Graphs and Discrete Color Images

Abstract: In this talk, a new innovative discrete color image compression scheme will be presented. Discrete color maps and graphs are widely used in a variety of applications such as geographic information systems, intelligent transportation systems, mobile computing, and the Internet. The relatively large size of color maps and graphs has negatively impacted their usage in many of such application especially in small storage mobile wireless devices and limited bandwidth data transmission systems. To meet storage and transmission requirements, the use of efficient compression methods becomes imperative. In this research, a fast lossless compression scheme for digital color map images and graph images in the raster image format is introduced. This scheme provides two main contributions. The first is the creation of a codebook that is based on symbol entropy and the second is our row-column reduction coder. Our experimental results show that the proposed scheme achieved, on average, a compression of 0.035 bpp for map images and 0.03 bpp for charts and graphs. These results are much higher than reported results in the literature including those of JBIG2. Moreover, the proposed scheme is fast and can be used as real time coder.

Bio: Professor Saif alZahir received his PhD degree in Electrical Engineering from the University of Pittsburgh. He is presently an full professor with the computer science program at the University of Northern British Columbia, Canada. Dr. alZahir is involved in research in the areas of image compression, image retrieval and indexing, wireless communications, graphics, mobile computing, m-learning and corporate governance. Dr. alZahir is the editor-in-chief of two international journals, member of several International Program Committees of international conferences. He authored or co-authored more than 100 journal papers, books, book chapters, and international conference papers. At present, Professor alZahir is a visiting professor in the Computer Science and Engineering at UAA.

Wednesday, October 29, 2014 in ENGR 342

11:30am-1:00pm

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