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1.

Authors: Tanvir Singh, V. P. Agrawal

Paper Title: Attribute based Specification, Comparison and Selection of Nanoactuator Elements

Abstract: Organizations are deploying well designed nanoactuators supporting converged applications of defence, mechanical industry, and biological applications, etc. Optimum selection of nanoactuator elements for R & D of nanodevices for given application satisfying desired aims and objectives is a multiple attribute/criteria/objective decision making problem.

The paper proposes technique for order preference by similarity to ideal solution (TOPSIS) to evaluate and rank nanoactuator elements in the presence of multiple attributes for solving the nanoactuator elements selection problem. The method normalizes attributes of nanoactuator elements to nullify the effect of different units and their values in the range of 0 to 1. The relative importance of different attributes of nanoactuator elements for different applications is considered. Euclidean distance of alternatives from these best and worst solutions of nanoactuator elements leads to the development of proximity /goodness/suitability index for ranking of nanoactuator elements. The method ensures that optimally selected nanoactuator elements are closest to the hypothetical best and farthest from the hypothetical worst solution. Research methodology in the form of step-by-step procedure is implemented with the help of an illustrative example.

Keywords: Nanoactuator elements selection; MADM; TOPSIS; Pertinent attributes; Weighted normalization; Ranking.

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2.

Authors: **To-Po Wang**

Paper Title: **A 71-76-GHz Receiver Frontend in 130-nm CMOS**

Abstract: A 71-76-GHz receiver frontend with a variable gain range of 48.6 dB is proposed in this paper. The receiver frontend composes of a low-noise amplifier (LNA) and a variable-gain low-noise amplifier (VG-LNA). To achieve high gain and low noise figure, the LNA consists of two common-source stages, and the VG-LNA consists of five common-source stages. Moreover, the gate terminals of the MOSFETs are adjusted to varying the frontend's gain in this work. Based on these methods, a 71-76-GHz receiver frontend has been designed in 130-nm CMOS process. Simulated results confirm these methods applied to this receiver frontend can effectively achieve a high gain of 21 dB at 74 GHz, a variable gain range of 48.6 dB, a minimum noise figure of 6.2 dB at 71 GHz, an input-referred third-order intercept point (IIP3) of -11.0 dBm. In addition, the receiver frontend is with low supply voltage of 1.3 V.

Keywords: Low-noise amplifier (LNA), millimeter-wave (mm-wave), variable-gain low-noise amplifier (VG-LNA).

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Authors: **O. V. Rotar, K. Tenedja, A. D. Arkhelyuk,V. I. Rotar, I. S. Davidencko,V. I. Fediv**

Paper Title: **Preparation of Chitosan Nanoparticles Loaded with Glutathione for Diminishing Tissue Ischemia-Reperfusion Injury**

Abstract: Nanoparticles composed of chitosan or chitosan plus cyclodextrin-beta comlex for tissue delivery of the glutathione were prepared. Mean size of nanoparticle systems were 100-150 nm in both groups. Encapsulation efficiency for glutathione of chitosan/cyclodextrin nanoparticles was 2,5 time higher than simple chitosan system thus leaded to improvement delivery of glutathione to mucosal layer of small intestine and diminishing tissue ischemia-reperfusion injury.

Keywords: Glutathione, nanoparticles, chitosan, cyclodextrin.

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3. **19-23**

Authors: **Mendpara Kishankumar, Patel Manish**

Paper Title: **Medial Image Registration Based on Information Theoretic Approach**

Abstract: Image Registration is basic step in image processing applications. By matching of two or more images taken at different times, from different angles or from different sensors we can get registration of those images. The registration process aligns the reference and target images. The formal approaches can be categorized according to their nature of procedure and from four basic steps of image registration process like feature detection, feature matching, estimation of transformation and image resampling and transformation. Medical image registration techniques further can be classified according to different modalities involved in registration process. In survey papers related to image registration there are different methods of medical image registration can be found and based on that methods we can compare that different methods with information theory based methods.

Keywords: Image Registration, Information Theory, Medical Image Processing, Mutual Information

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