Power of Mathematical Tools and Models from Circuit Designs to the Assessment of Human Interacted Events

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Abstract

In this talk, the speaker will share his more than forty years of research experience in using mathematical tools and models from analog circuit design to the assessment of human interacted events.

The talk will consist of 3 parts.

In the first part, mathematical tools employed to design active and passive microwave circuits using Real Frequency Techniques will be outlined. Many practical examples will be presented (such as “Design of a 20 MHz-100 MHz antenna matching network for military applications”, “Combined VHF-UHF band Power Amplifier for security force communications”, “Design of a Two-Stage Mixed Element Microwave Amplifier for multi-purpose use” etc.) [1-4]

In the second part of the talk, the speaker will introduce novel mathematical tools to model one dimensional signals (such as voice and biomedical signals) and two-dimensional signals (such as picture, biomedical images etc.) by means of the method called SYMPES. It will be shown that SYMPES voice and image codecs provide the means for utmost trusted communications without encryption. During the talk, “Real Time-Sympes Voice Demo” will be shown [5-7].

The third part of the talk is devoted to the understanding of the human interacted events by means of multi-dimensional-multi level linear stochastic models (MD-ML-LSM). Three examples will be given. The first one, details the lethal train accident occurred in 2004 in Turkey. In the second example, a “National Power Measurement” tool is presented to assess the behavior of the countries. In the third example, the MD-ML-LSM is used for the diagnosis of the hormone diseases [8-10].

In the fourth part of the talk, the speaker will cover a project which is developed for the Ministry of Development and Ministry of Justice of the Turkish Government to detect the personality disorders by means of a linear stochastic model. The model was developed based on the known personality tests run in the correction houses of Turkey. Then, the model was applied to detect personality disorders among 1000 high school students. Thereafter, rehabilitation programs were developed and organized to those students who were selected as the outcome of the applied model. [11]

References

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