

On the Frontier of Computers with the Real World

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Abstract: The presentation is a review of the author's contributions to the development and application of floating-point analog-to-digital converters (FP-ADC's) in various fields. Computers nowadays are embedded in almost every electronic equipment that is connected to the analog world, while algorithms are performed in digital form. FP-ADCs were conceived and used to quantize wide dynamic range signals in applications where large signals need not be encoded with a precision greater than that required for small ones. Comparing floating-point with uniform quantization, it was shown that FP-ADC provides smaller relative quantization error and higher dynamic range for the same resolution. In this presentation we will refer to several applications of floating-point quantization in testing high-power electric generators and blood pressure monitors.

Short bio:

Prof. Dr. Voicu Groza is a full professor at School of Electrical Engineering and Computer Science, Faculty of Engineering, University of Ottawa, Canada, member of the Faculty of Graduate and Postdoctoral Studies. He received his PhD in the field of Electrical Engineering, Polytechnic Institute of Timisoara, Romania with the thesis entitled High-Speed Floating-Point Data Acquisition Systems. He is IEEE Fellow. He has been the chair of Subcommittee on Blood Pressure Measurement of the TC-25 Technical Committee on Medical and Biological Measurements, IEEE Instrumentation and Measurement Society, and Ottawa Chapter of IEEE Instrumentation and Measurement Society.

He received „W.S. Read Outstanding Service Award, for outstanding service and dedication to IEEE Canada (Region 7) and its members”, IEEE Canada in 2021.

He is director of the Group for Embedded MicroSystems Research Laboratory and the BioMedical Instrumentation and Processing Research Laboratory, University of Ottawa, Canada.

His main fields of interests are soft computing applications, applied computational intelligence, energy efficiency improvements, laboratory instrumentation, biomedical engineering, health informatics.

He serves as field editor, editor board member, guest editor of several international scientific journals.

His strong connection dates back to 2007 with Óbuda University via IEEE International Symposium on Applied Computational Intelligence and Informatics, where he takes part actively every year.