Turkish Journal

of

Electrical Engineering & Computer Sciences

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Turkish Journal of Electrical Engineering & Computer Sciences

A Labview-Based Virtual Instrument for Engineering Education: A Numerical Fourier Transform Tool

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Abstract: Engineering is based on practice. The minima of this practice should be given during the university education. This has become more and more comprehensive and expensive parallel to high-technology devices developed and presented to societies. Computers, microprocessor-based devices, programmable systems on Chip (PSoC), etc., make engineering education not only very complex but interdisciplinary as well. Building undergraduate labs has become more and more expensive if only physical experimentation and hands-on training are targeted. On the other hand, simple, comparatively much cheaper software may turn a regular personal computer (PC) into a virtual lab. The key question therefore is, to establish a balance between virtual and real labs, so as to optimize cost problems, while graduating sophisticated engineers with enough practice. This article introduces a virtual instrumentation (a LabVIEW package DOGUS$_F$FT.VI) for numerical Fourier transform calculations, which may also be used as an educational tool.

Key Words: Fourier transformation, FFT, DFT, LabView, simulation, engineering education, visualization, virtual instrumentation

Turk. J. Elec. Eng. & Comp. Sci., **14**, (2006), 129-152.
Full text: pdf
Other articles published in the same issue: Turk. J. Elec. Eng. & Comp. Sci.,vol.14,iss.1.