Hardware and Software Modelling and Testing of Non-Conventional Data-Flow Architecture

Yuri Shikunov[1], Dmitry Khilko[2], Yuri Stepchenkov[3]
Advanced computer systems architectures dept.
Institute of Informatics Problems, Federal Research Center "Computer Science and Control" of the Russian Academy of Sciences, (IPI FRS CSC RAS), IPI RAS
Moscow, Russian Federation
[1]YIShikunov@gmail.com, [2]DHilko@yandex.ru, [3]YStepchenkov@ipiran.ru

Abstract

This paper covers new recurrent data-flow computational model, as well as architecture that implements principles and ideas of this model. Basic differences of this model from the existing ones and examine key aspects of this new computational model including its implementation in the form of Hybrid Recurrent Architecture of Digital Signal Processor are described. The approach and methodology of hardware and software modelling and testing based on new architecture are being proposed. We introduce the model of implementation of the proposed architecture as well as imitation modelling tools of recurrent data-flow architecture, implementing said model. Functionality of imitation model and its role in software development suite for new architecture software development is being described. We introduce the notion of the target modelling platform called GAROS IDE. The results of platform testing on several subtasks of isolated words recognition problem are presented.