

The Development of Open Source Software SCILAB/SCICOS in Communication Principle Simulation Experiment

Chen Ping Dong Xing Hua Zhou Xu

*Beijing University of Posts and Telecommunications
School of Information and Communication Engineering
rab1106@bupt.edu.cn xht3579@gmail.com*

Abstract

As simulation softwares are playing an essential role in communication theory experiment, but using the pirate simulation software will have a bad effect in building up a correct consciousness of protecting the copyright among students. It is a revolution to introduce open source software to the university laboratory, which will not only save the limited education outlay, building up a legal and normative environment, but also be good to develop potential of students.

Although SCILAB/SCICOS is a powerful open source scientific software, in order to apply it to communication theory experiment, we need a platform including sufficient simulation blocks, test cases and detailed help files. In this paper, it proposed a method for the usage of SCICOS in communication theory experiment and a method for secondary development in communication system simulation based on SCICOS. The first method introduced how to use SCICOS in communication systems simulation, setting 2FSK modulation as an example. In this system, the block "Random Binary Generator" generates binary digital signal $b(t)$, "sinusoid generator" block gives out two carrier waves, and "switch" acts as a switch control block. The second method introduced how to build up a baseband transmission system. In this system, Square Raised Root Cosine filter consists of programmable block "scifunc", "serial to bus" and "bus to serial" blocks from MODNUM. "Mathematical Expression" block is programmed to make decision.

Based on the two methods, a platform is designed for an innovative communication theory experiment course and has received good feedbacks. The platform includes a communication simulation toolbox-- SCICOM, a set of experimental cases, and a guiding book.

Keywords: SCICOS; simulation software; SCICOM; communication theory experiment