

SOFTWARE SYSTEM OF UKRAINIAN TECHNICAL TEXTS ADAPTATION FOR PEOPLE WITH VISUAL IMPAIRMENTS

Oleksandr Lozytskyy¹, Natalia Kunanets²

Information Systems and Networks Department, Lviv Polytechnic National University, S. Bandery Str., 12, Lviv, 79013, UKRAINE, E-mail: ¹netexpo@yahoo.com, ²nek.lviv@gmail.com

The scientific paper is dedicated to the description of the developed computational methods and software of the computerized data processing and presentation for people with a visual impairments system.

There are a lot of scientists who research the problem of information accessibility for visually impaired and totally blind people. Considerable contribution to the creation of information technologies for blind people was made in Sweden, Japan, Germany, USA, France, Canada, Denmark, England and other leading countries. Unlike the leading countries the information accessibility for blind remains problematic and painful in Ukraine. Solution of this problem will allow blind to realize them selves in everyday life.

The author developed an applied programmed system of Ukrainian technical texts processing that consists of a set of processing and conversion methods for automatic reading of mathematical formulas and symbols of the Ukrainian language, which are written in a variety of formats. Unlike prior methods, it is more directed towards the segmentation and reading by the rules rather than streaming audio.

As a result it was developed an automatic reading system for the set of different complexity of mathematical formulas (read correctly: 92.5%). The system can be used by visually impaired people for studying the basics of mathematics, physics, astronomy, etc. Also, the author adapted information technology of DAISY (Digital Accessible Information System) books produced for the Ukrainian language. It can help to make DAISY math's books that can be studied by the blind people. It was created automation equipped working places for Ukrainian people with visual impairments. The main results of the research implemented in Lviv consulting center for special needs children are based on "School-gymnasium "Syhivska", boarding school №100 for the blind children, Lviv regional organization "Ukrainian Union of Disabled - USI" and Lviv Regional Fund for Social Protection and Rehabilitation of the Blind when developing an applied programmed system of computer data processing and presentation for people with visual impairments.

Keywords – visual impairments, blind, special needs, applied programmed system, Ukrainian technical text processing, mathematical formula, visual impairment, syntax tree, sounding, automation equipped working place, DAISY, MathML.