

# Development of a new „SignWriter“ Program

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**Abstract** The „Sutton SignWriting“ system is a practical writing system for deaf sign languages. The symbols describe shape, location and movement of hands as well facial expressions and other signing information. „SignWriter Java 1.5/Swing“ is being developed as the successor to „SignWriter DOS“, a program for typing and editing „SignWriting“ texts, used by school children, teachers, linguists and Deaf people. The new Java version 1.5 „Tiger“ is used in development and Swing as the graphical user interface.

**Keywords** Sign language processing, writing systems for sign languages, SignWriting, alphabets, SignWriter, Java, Java 1.5, Java „Tiger“

## The new program

A „SignWriter Java 1.5/Swing“ program as the successor to „SignWriter DOS“ programmed by Richard Gleaves is being developed in the new Java 1.5 („Tiger“) version using the Swing graphical user interface library. The existing „SignWriter DOS“ program is a simple, yet powerful program for typing and editing „SignWriting“ texts. As many school children, teachers and linguists are already using this program for their everyday work, it is important that the typing conventions are not changed very much. Support for the SGN files („SignWriter DOS“ file format for „SignWriting“ texts) is important as well. In a summary, former users shouldn't need to change their way of working with „SignWriting“ or not very much.

There are some new features, however: A friendlier user interface (thanks to Swing of Java 1.5) is implemented, which is also easier for new users to understand. And because there are different „alphabets“ in use, a multi-alphabet capability seems to be important, too. The old symbols of „SignWriter DOS“ are retrofitted into the framework of the multi-alphabet capability, or expressed in a simpler way: „SignWriter Java 1.5/Swing“ understands the old „alphabet“, but can work with and convert to the new ones. And another important thing is the support for SWML files (an XML file format to store „SignWriting“ texts, developed by Antônio Carlos da Rocha Costa).

It is hoped that the new „SignWriter“ program is

accepted by the SignWriting community as the successor to „SignWriter DOS“. Public release is planned for autumn, 2004.

## About „SignWriting“ and the old program

„Sutton SignWriting“, developed by Valerie Sutton, is a practical writing system which can be used for all the sign languages of the world. The symbols of „SignWriting“ describe the shape, location and movements of the hands, as well as the facial expressions which a signer makes and other signing information. This writing system gives Deaf people the possibility of writing to each other, making notes and reading text written in their native language.

In the eighties, Richard Gleaves developed the first „SignWriter“ program, which made it possible to type „SignWriting“ on the computer. The latest version 4.4 is now eight years old. It is an excellent software from the early days of personal computers, but it has become somewhat outdated. The computer resources at that time were limited and the operating systems were very different from those of today. The user interface no longer meets the expectations which today's users have. One of the biggest drawbacks to this earlier version is that it only runs under a pure DOS system. Modern Mac OS, Windows NT, 2000 and XP all require a DOS virtual machine to start „SignWriter DOS“. There are other shortcomings: Low resolution of the symbols which leads to visible pixelization (zigzag effect on round curves or oblique lines) and inverted

display (white on black). These are all reasons why a successor to the SignWriter DOS is urgently needed by the SignWriting community.

### **Demonstration and Discussion**

The program is being redeveloped from scratch using the new version 1.5 of Java and with the Swing graphical user interface library. Development is open source. „SignWriter“ is layered onto an alphabet package called „signwriter.alphabet“ which knows about the symbols and is modeled after Sutton's „SymbolBank“. It is hoped that especially the „alphabet“ package can be reused in other projects outside „SignWriter Java“.

The diagram shows some Java interfaces and classes which make up the programmer's interface to the alphabet. This interface is multi-alphabet capable. The programmer loads an **Alphabet** object using the **Factory.loadAlphabet()** method. From the alphabet one can manage the symbols and base symbols. The package is immutable: once loaded it is impossible to destroy the alphabet by mistake. For symbols within a sign there's another class called **SignSymbol** outside the package (not shown in the diagram). There are many more technical details interesting for developers. But because the audience of the demonstration are end users as well, we will stop here. Please see fig. 1 at the bottom of the paper for an UML class diagram.

The new features of Java 1.5 are used in the program. They are genericity (especially useful for collections of objects like the symbols of a sign, **Sign.getParts()** returns a list of sign parts with the type **List<Part>** for example); the enhanced for loop for an easier iteration through collections and many others. Important for end-users additionally is the improved look-and-feel of Swing which gives Java applications a more modern and friendlier appearance than before.

The demonstration is an opportunity to show and discuss design decisions and diagrams, screenshots and last-minute experiences and to play with the latest development version of the unfinished software. Developers can ask questions about inner workings. End users about the features and the look-and-feel. It is a big

opportunity for the team as well! We need the feedback. Without feedback we don't know whether we do the right thing. You have an impact on the development.

Be warned, however. The software is unfinished and not even in alpha stage. Things might not work at all.

### **About Daniel Noelpp**

Born Deaf in Switzerland 1970, he attended a residential school for Deaf children near Berne. Later, he was „mainstreamed“ into a school with hearing children. He received his college diploma in 1989. After several years studying at the University of Berne, he worked as a Software Engineer for the same University as well as for several companies in Switzerland. In 2000, he worked for six months as a Software Consultant in Pune, India. At the present time, he is attending HTI (University of Applied Sciences) in Berne and developing „SignWriter Java 1.5/Swing“ at home.

### **The team members**

The software is not developed by Daniel Noelpp alone. The other members of the team are Günel Hayirli (HTI student, hearing) and Matthias Noelpp (Electrical engineer, hard of hearing).

### **Donations**

We thank Ingvild Roald, for the generous financial support!

The project team is working hard with rather limited resources. If you are willing to give a donation to the development, it is appreciated very much. It is planned to put a list of supporters and donators in the About menu of the SignWriter prominently. Would you like to be included in this list? Please contact Daniel Noelpp.

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fig. 1 UML class diagram for package signwriter.alphabet

