

APPENDIX K: VISUAL DISPLAY SOFTWARE SPECIFICATIONS

The following are specifications for implementing software capable of visualising interaction as set out by the thesis. If the appendix is presented to a computer programmer for the purpose of implementing visual display software, it should be accompanied by a sample excerpt of transcribed and coded spoken interaction (cf. appendixes F through J), and a sample visual display (e.g., one of the visual displays presented in chapter 6). A prospective software programmer may also need access to section 5.3 of the this thesis, which describes the procedure for visualising features of spoken interaction in detail.

1. Purpose of software:

The software will be used for transcription, coding and visualisation of interaction. The users will be applied linguistics researchers. This user group is likely to prefer simple, user-friendly, windows-based software.

2. Operating system compatibility:

The software should run on Windows 98/2000/NT/XP.

3. General description of software:

This document describes the software in terms of an input module and an output module. If necessary, the actual implementation of the software could be in the form of a more unified architecture.

The input module should allow the user to transcribe spoken discourse directly into the software. In addition, it should be possible to import transcribed discourse from text-only file formats. The input module should also allow the user to code the transcribed discourse in the form of numerical values (corresponding to either categorical or quantitative data).

The user should be able to select coded data in the input module for visualisation in the output module. This should be a simple procedure, including the selection of columns of coded data, the selection of visual display options, and the possibility of making any necessary changes to the resulting visualisation.

4. The input module:

The input module should allow for the transcription and coding of discourse data. The interface of this module could resemble a spreadsheet with columns and rows. These columns should have the following features:

- The first column should be an auto number. Individual cells in this column should accommodate 4-digit numbers, and the width of the column could be fixed accordingly. It should be possible to specify the first number of the auto number sequence (e.g., start at # 25).
- The second column would be used to record the name of the speaker(s). This column could be of fixed or adjustable width, and cells should accommodate a minimum of 10 characters.

- The third column would be used for transcribing speech. This column could be of fixed or adjustable width, and cells should accommodate a minimum of 250 characters (but preferably a higher, or unlimited, number of characters). All characters entered in individual cells should be visible at all times, while not changing the width of the column (unless the user chooses to change the width). That is, longer entries should appear in the form of multiple lines of text fitting into single cells. The cells should accommodate characters and symbols commonly used in word-processing software (i.e., the cells should be text fields).
- The fourth column would be used for comments on the discourse. This column should have the same features as column three (see above).
- There should be a minimum of 64 additional columns available for coding the transcribed discourse data. These columns could be of fixed or adjustable width. These columns should accommodate both numbers and letter symbols. Individual cells should accommodate up to 8 characters. The 64 columns should preferably be accessible in the form of eight individual panes (allowing the user to ‘flip’ through individual panes of 8 variables, while keeping the first four columns in view at all times). The ability to name these individual panes would be desirable. Alternatively, the 64 columns could be accessible by way of a scroll bar at the bottom of the screen (allowing the user to scroll through the 64 columns, while keeping the first four columns in view at all times).
- All columns should have column labels, and the user should be able to name (and rename) these.
- There should be a vertical scroll bar, allowing the user to scroll up and down. Column labels should not move out of sight when scrolling down the page.

Rows in the input module should have the following features:

- The input module should contain a minimum of 9999 rows.
- It should be possible to delete and insert rows with ease.
- The first column (containing the auto number sequence) should automatically update after deleting or inserting one, or more, rows.

The input module should have the following additional features:

- All the cells/columns of the input module should be left justified.
- It should be possible to cut, copy and paste between selected cells, rows and columns (using the CTRL+X/C/V shortcut commands).
- Empty cells should be allowed in all columns and rows (except in the auto number column).
- It should *not* be possible to ‘sort’ the data by *any* rows or columns.
- It should be possible to export the contents of columns one, two, three and four to a text file. After export of rows one, two, three and four, the text file should look something like this:

25	John	Danny?/ (..)	
26			
27	Danny	yes?/ can you make some software for me?/ software?/ yeah,\	
28	John		
29	Danny	some software.\	
30	John	(...)	yawning
31			
32	Danny	what kind of software?\	
33	John	something really cool.\	
34	Danny	what?\	
35	Danny	software that will do my research for me,_	
36	John	(2)	laughing
37			
38	Danny	yeah sure.\	

- It should be possible to export the contents of only column 3 to a text file.
- It should be possible to export the contents of selected variable columns to MS Excel and SPSS.

6. The output module:

The output module should allow for the visualisation of the variables coded in the input module. The user should be able to select which variable rows and columns are visualised.

The input and output modules should interact as follows:

- It should be possible to select a set of variables (columns in the input module), a defined range (rows in the input module), as well as a combination of variables/range (columns and rows in the input module) for visualisation.
- The scale of the horizontal axis of the resulting chart should be generated (or reflect) the auto number sequence in the input module.
- A balance between user options and software automation should be developed in generating the scale of the vertical axis of the resulting chart.
- It is desirable that the visualisations (see description of the output module, below) update automatically when deleting or inserting rows, as well as when changing entries in the variable columns.

The output module should have the following additional features:

- Each selection of columns and rows in the input module should be visualised as an individual chart in the output module.
- It should be possible to display a minimum of three such charts in a single visual display. That is, it should be possible to display three charts alongside each other (one above the other). In such cases, the charts should be horizontally aligned according to the auto number sequence in the input module. It should be possible to save such a visual display, containing up to three separate charts, as a separate output file (or saved as a coherent visual display unit in a larger file, in the case that the input and output modules are part of a more unified software architecture).
- It should be possible to specify which area of the visual display selected data from the input module will occupy (e.g., top, middle or bottom of visual display area).
- It should be possible to visualise at least two, but preferably up to 8, separate variable columns concurrently in a single chart. In other words, a visual display might contain up to three charts, each of which contains the visualisation of up to 8 variable columns from the input module.
- The user should have some control over what symbols and form of graphs used to visualise individual variables. The user should also have the option of specifying legends and axis titles.
- It should be possible to highlight areas of charts and visual displays in various colours.
- It should be possible to resize individual charts and visual displays.
- It should be possible to add textboxes, lines and arrows to charts and visual displays.
- It should be possible to print charts and visual displays directly from the output module.
- It should be possible to export charts and visual displays (as BMP files, or as WMF files for use in word-processing documents).