Master's Thesis

Graphical Scanning of Diagrams
A Spatial Relations Analyzer

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Chapter 1

Introduction

Diagrams, two dimensional languages and graphical formalisms like Entity Relationship models, Data Flow Diagrams, Finite State Automata (FSA) and Venn diagrams are being used in numerous ways and for quite some time. These diagrams are drawn according to some graphical formalism in which different graphical primitives are interpreted as being different symbols with different meaning. Diagrams can either be drawn with a specialized graphical editor or with a general graphical editor. A specialized graphical editor is, like an editor for SDL, designed to support just one graphical formalism, and gives feedback to the user about the correctness of the drawing created. A general graphical editor can support any kind of graphical formalism; everything the user wants to draw, can be drawn, but it cannot give feedback to the user on the drawing created. So, if a user wants to use a general graphical editor, which gives more freedom on creating drawings, and wants support whether or not a correct diagram is being created, a number of tools are needed to supply the user with feedback. To be able to give the user freedom of drawing and support the user with feedback, a hybrid editor has to be used. The editor has to be expanded with a graphical scanner and parser. The expansion will make the editor able to give feedback to the user, manipulate complete parts of the drawing, which were drawn as separate parts, and also give specific language support.

The traditional architecture for textual languages (*Figure 1.1*) uses an editor to create and modify the textual image. The textual image is then processed by a scanner and a parser. The parser produces a tree, which is used in a semantical analysis phase to construct the structural image. If necessary, the editor can use the structural image to modify the textual image, followed by another scan and parse phase.