

Z: An integrated programming environment for quantitative analysis.

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Abstract

Statistical analysis systems are migrating towards becoming truly integrated programming/analysis environments. The goal is to achieve seamless integration between the programming language, the statistical methodology, and the visual display. Ultimately, the analyst should be able to communicate instructions and receive information from the computer in a simple and “natural” fashion. Interaction will typically be a mix of command line input (and output) and interaction (input and output) with various graphical elements of the visual display.

Z is a display-oriented quantitative analysis environment that has been developed at the University of Waterloo. Among the features which distinguish Z from previous interactive systems are the following:

- interactive displays of the analysis history
- graphical programming
- highly modularized and easily extended statistical graphics
- mix of available programming paradigms although object-oriented techniques are used extensively
- constraint-oriented programming
- accurate software models of mathematical and statistical concepts
- an incremental compiler, code inspectors, and debugging capabilities

Z is an extension of the ANSI Common Lisp language. Consequently it runs on a variety of hardware platforms. In this talk an overview of the system will be given with particular focus on the display-oriented facilities of Z.