# AVID: AUTOMATIC VISUALIZATION INTERFACE DESIGNER

***Mei C. Chuah***

CMU-CS-00-128

School of Computer Science
Computer Science Department
Carnegie Mellon University
Pittsburgh, PA

Thesis Committee

Steve Roth, Co-chair
Jim Morris, Co-chair
Scott Fahlman
Jock Mackinlay
Dan Olsen

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*To*

***Claude Fennema***

who inspired me and made all this possible

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MEI C. CHUAH, PH.D.
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Today's widespread, cheap and fast communication makes a great variety and quantity of data available to consumers. *Information presentation* addresses the important problem of packaging and visualizing this data for users in a way that facilitates understanding and analysis. Information presentations can be created by human designers or they can be automatically generated by expert computer systems. Automatic generation offers great flexibility in performing data and information analysis tasks, because new designs are generated on a case by case basis to suit current and changing future needs. This is crucial in areas or domains where it is difficult to capture beforehand all combinations of data and analysis goals desired by users, since pre-conceived human designs are then less feasible. The focus of this thesis is to improve designs generated by automatic systems and to expand the range of tasks that can be addressed by such systems. Previous work in this area dealt primarily with how data can be mapped to graphics effectively, based on established design knowledge and perceptual rules. In this thesis I expand automatic presentation design to include not only effective mapping rules but also rules describing how data may be pre-processed before it is presented. I will show that expanding automatic design in this way allows us to consider a much wider range of designs, improves the quality of automatically generated designs, and enables automatic systems to deal with larger data sets and a wider range of tasks. The addition of data pre-processing functions also allows us to include input devices in graphical presentations, thus making them more active, engaging and flexible for users. Previous work did not consider input devices because their use is limited when we consider only mapping functions in our designs. This thesis develops a framework and design strategies for expanding the quality and breadth of automatically generated information presentations. This will in turn improve the effectiveness with which computer systems can communicate data to users, facilitating understanding and analysis of a large variety of data, over a wide range of information goals.