SESSION VI SYMPOSIUM: HARDWARE INNOVATION AND UTILIZATION

RICHARD A. MARTIN, *Indiana University, Presider*

Symposium: Hardware innovation and utilization

RICHARD A. MARTIN
Indiana University, Bloomington, Indiana 47401

A tutorially structured symposium is being presented by professionals in various fields of computer technology. The symposium develops the theme of effective utilization of computer-related hardware in papers describing (a) elementary hardware logic design, (b) microcomputer and microcontroller design and applications, and (c) microprogramming techniques and applications.

The development of modern experimental psychology dictates the increased utilization of sophisticated computer-oriented systems for control, testing, and analysis. Often the greatest hindrance to progress has been a lack of knowledge and understanding of hardware design and an inability to instrument using state-of-the-art techniques. The thrust of the symposium presentation is to establish basic concepts and techniques which are useful as resources in designing systems and subsystem elements for use by experimental psychologists. The three distinct levels of physical hardware sophistication presented deal with particular types of hardware fundamentals or innovations which can be utilized to extend the capabilities of present systems or assist in the design and specification of new systems.

This tutorially structured symposium is being presented by professionals in various fields of computer technology. Such input is desirable both for assistance in the solution of particular instrumentation problems and for the continuing awareness of the innovative technologies

available. It should not be necessary to limit the scope of research by the technology of past years. A fundamental working relationship between our several professions is vital to the adequate development of instrumentation required by experimental psychologists.

The first paper (*Simplified Hardware Controller Design*, presented by David Winkel, Professor of Computer Science and Director of Computing Services, University of Wyoming) presents a technique for hardware design which significantly improves and simplifies standard logic design. The second paper (*Microprogramming in Psychology*, presented by Jack Howard, Service Engineer, Hewlett-Packard Company) examines the application-oriented concept of microprogramming. The third paper (*A Structural Approach to Microcomputer System Design*, presented by Kenneth McKenzie, 8080 Products Manager, INTEL Corporation) develops a level of control which involves a structured approach to the utilization of microcomputer-based system components.

All of the papers emphasize the need for detailed analysis of the application before instrumentation. Each paper describes techniques suitable for making the type of design analysis necessary for selecting the proper hardware devices actually needed in the application. The symposium provides basic techniques and alternatives which can be used to solve on-line experimental manipulation problems in psychological research.

Preparation of this symposium was in part supported by National Institute of Mental Health Grant PHS P01 MH14658 awarded to George A. Heise. Requests for reprints or related information should be sent to Richard A. Martin, Department of Psychology, Indiana University, Bloomington, Indiana 47401.