Developments in Business Simulation & Experiential Exercises, Volume 8, 1981

MICROPROCESSOR CONTROLLED INTERACTIVE VIDEO SIMULATION

Corey D. Schou, University of Central Florida

ABSTRACT

This paper outlines the ontogeny of a microcomputer controlled interactive video simulation system. The system allows for programmatic control of simulation. involving video scenarios. Further, the system allows the presentation of controlled video instructions to participants in the simulation.

INTRODUCTION

Computer and video tape equipment have become common components in most training and education situations. The computer has traditionally been applied to simulations which require flexibility, large calculations, data manipulation, and record keeping. Video tape on the other hand is used predominately to provide records of human based situational simulations and to deliver repeatable instructions. The techniques described here combine attributes of both systems to provide interactive computer driven video based simulations.

Hardware

The basic hardware for the system used at the University of Central Florida is both inexpensive and readily available. The video cassette recorder is connected via a digital controller to an Apple II computer/Bell and Howell Training System with 48K memory, disk drive, language card, and a serial communication card.

App1ications

There are six major applications for which this system has been implemented. The first implementation is in conjunction with a large scale simulation requiring more computer power than available in the microcomputer system. Most large scale simulations have a degree of complexity which requires most large scale simulation have a degree of complexity which requires careful instruction to the participants. The microprocessor is connected to the large simulation via a serial communication interface. When the participant needs help or stakes an error, the controller selects the appropriate material from the video tape. Through utilization of this system, the total time involved in the simulation has been reduced by 15%. The second implementation. a micro processor-based simulation is an outgrowth of the first application in that it provides fundamental instruction in the use of the simulation and help to the student; however, it adds the dimension of realism in that various video segments can be shown the student to aid his understanding of the process. For example, if a student is to produce widgets, a video segment can be shown to him about widget production. When properly produced, these video segments mask the long computer times brought about by a microprocessor.

The third implementation allows for the creation of computer simulated video interviews. The subject is provided with lists of questions to ask the interviewee Based on the subject's selection, various "live" responses are shown randomly from the video tape. These provide a degree of realism not otherwise available in simulation.

The fourth and fifth application of the technique are similar in that they use pre-prepared video tapes under computer control. In the one-on-one version, the instructor cam select video segments in any order he chooses and present them to the student under computer control. Based on student responses, various sections can be reviewed or skipped as needed. The group version of the system allows computer-driven questions to be generated to a class. Based on their responses, various actions can be taken by the computer.

The final application of the system is still being tested but allows for two-way video. The primary use here is to simulate interviews. The student is shown a video segment to which he must respond. His response is video taped by the computer system and a dialogue can be created. This dialogue can then be critiqued by an evaluator at a later time. The primary advantage of this technique is that it allows practice without a skilled video operator present.

IMPLICATION

This hybrid system allows the simulator to add new depth and breadth to his simulation. It allows for the "personal' touch as well as closely controlled instruction to the participants. This usually results in reduced time for participants in the simulation. The major advantage which has been found thus far is that microprocessor simulation become more enjoyable to the participant and therefore, they seem to be more apt to participate actively.