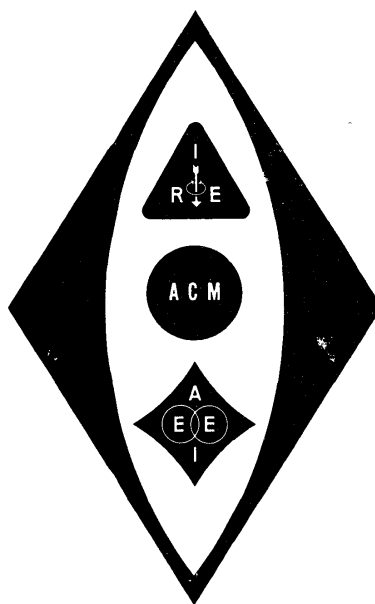


Proceedings of the EASTERN JOINT COMPUTER CONFERENCE

December 1-3, 1959

Boston, Massachusetts



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Foreword

For some time it has been customary to hear complaints about the limited value of large technical conferences. Despite this fact, I represent a group of people who have worked assiduously to arrange this affair. And over 2,300 people have expended considerable effort to attend. It is interesting to inquire seriously as to the reason for so much effort. There are, of course, a number of very cynical answers. However, I would like to offer a less cynical one.

Perhaps it is only a convenient rationalization, but I still find the computer field an exciting and stimulating domain. The excitement about the computer arises in much the same way as the excitement about atomic energy; one may almost *feel* the changes being produced in society. For an applied scientist or engineer, it is usually the applications which lend to a discipline an aura of excitement. Well, then, I believe that many of us are here because of a continued enthusiasm in the possibilities of the computer. The number and importance of the potential applications are still increasing more rapidly than the onset of general boredom.

In the tiny span of years from the first to the ninth EJCC, we have been witness to a wholesale change in the techniques of scientific computation, witness to a revolution in business data handling, and witness to the use of computers for real time control of weapons systems, industrial plants and space vehicles. Surely these events are exciting enough to partially justify our large conferences.

And yet I believe that the most important applications of the computer have not yet been realized. Certainly computer inroads in the business world and the industrial plant have only just begun. However, for me, the most exciting applications are those which threaten to affect all aspects of human progress. I would like to point toward two such potentially pervasive applications — two impending applications that excite me considerably.

The first is the application of the computer in studying and copying the characteristics of biological systems. This is a doubly potent use of a computer, involving useful feedback, because real gains in understanding biological systems might lead to better computer systems. The first steps in this direction

have already been taken. Computers are being used for analysis of electroencephalograph data and will be used to study many other types of clinical data. Computers have been used to permit construction and study of models of neuron assemblages. A whole gamut of pattern recognition techniques is undergoing intensive investigation. People are trying to learn about learning. (Actually, even if we don't get very far, we will have the harmless fun of constructing more and better maze-solving programs and chess-playing programs while trying.)

The second application may be characterized as the library problem. I think that the proper way to measure the importance of this application is to think of it as a new way for people to tap the accumulated knowledge of the recent and distant past. The printing press was one such new way to tap the experience of the past, but now there are difficulties. The large number of printed books and journals, the existence of important scientific communities separated by language barriers and the inadequacies of our present retrieval techniques have seriously restricted our ability to connect pertinent information to pertinent researchers.

The pace of scientific progress might well take a large jump if, upon receiving a new project, a researcher might receive a graded synthesis of all human experience on that subject from the local library computer. Similarly, a lawyer, faced with a new case, would surely like to receive a relevance-ordered listing of all applicable court experience, and a doctor might be willing to trade clinical data and careful reporting in return for ordered estimates of diagnosis. In its present form, the technical journal itself may be facing its last few decades. The library computer concept is quite powerful, and it may some day be expedient for an author to send a new technical paper only to the library, without the continued expenditure of quite so much paper.

So, I don't think the excitement is dying out; I think it is increasing, and I expect that computer conferences will be of interest and value for some time to come.

FRANK E. HEART
Conference Chairman

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