

Preface

In 1959, the first memoranda from the Artificial Intelligence Project, a joint project between MIT's Research Laboratory of Electronics and the Computation Center and the precursor to the present-day Artificial Intelligence Laboratory, were published. Scanning through these first memos provides a fascinating glimpse into the early history of a fledgling field. While many of the first memos dealt with aspects of the LISP programming language, which was being developed explicitly to support the AI Project, and which as a consequence is the second oldest active programming language after FORTRAN, one can already see the seeds of today's AI programs begin planted. For example, Memo 10 deals with a symbolic differentiation program – a problem that present day freshmen at MIT see in the second week of the first class in computer science. Memo 16 describes a Question-Answering System for English, and Memo 17 is entitled "Programs with Common Sense" perhaps heralding today's expert systems. Memo 41 describes several years work on a chess program, and memo 53 describes a system to recognize hand drawn characters. A similar glance at the early history of other pioneering AI centers shows the same thing. For example, a 1954 memo from Carnegie-Mellon University describes their chess machine, and a 1958 memo describes a heuristic program to do assembly line balancing in industrial plants.

If one can already find documents on natural language processing, game playing, vision, reasoning and learning in the late 50's and early 60's, critics of AI might well wonder what, if any, progress has been made in the last twenty-five years. In many cases, these early efforts looked at limited slices of the problem, and proposed initial solutions which have since undergone significant refinement, extension or replacement. Today's AI programs, while addressing many of the same problems, are much more sophisticated than their early predecessors, and have a much broader scope of application. As a consequence, AI is graduating from the university research lab to the marketplace. This has led to a broad based interest in AI, as evidenced by the recent spate of articles appearing in national news magazines and television documentaries, and job advertisements from virtually every major corporation for AI experts.

Given the surge of public interest in AI and its emergence into the commercial forum, Christine Simonsen of MIT's Seminar Office concluded

that it was an opportune moment to discuss the current state and possible future directions of Artificial Intelligence. On January 21–23, 1986, the Artificial Intelligence Laboratory, the Laboratory for Computer Science, and the Seminar Office of the Center for Advanced Engineering Study, all at MIT, sponsored a conference entitled *ARTIFICIAL INTELLIGENCE: Current Applications, Trends and Future Opportunities*. The conference was intended to provide participants with a perspective: on current research at MIT, on future trends in AI research, and on potential applications of current research.

The conference featured presentations by twelve members of the MIT faculty and staff, all involved in state of the art research in Artificial Intelligence. To provide an archival summary of those presentations, each speaker has also prepared a chapter for this book. As the title suggests, the book is intended to provide a viewpoint on the current and future state of Artificial Intelligence, as envisioned by members of the MIT research community. Perhaps in thirty years, readers will consider this book as providing an equally curious glimpse of the history of the field as the glimpse one gets by looking back at the pioneering papers of the 1950's.

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