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RESEARCH IN ADVANCED FORMAL THEOREM-PROVING TECHNIQUES

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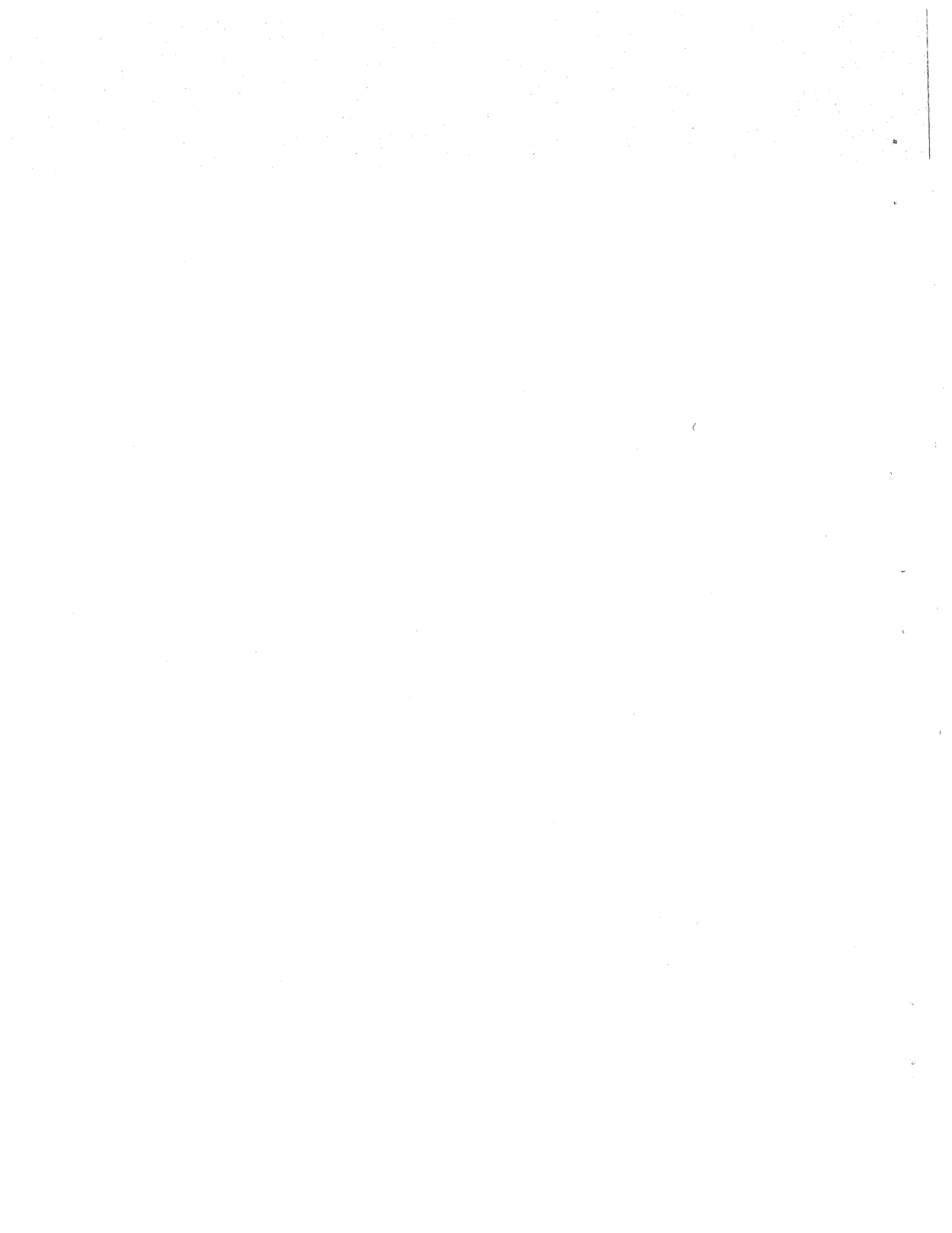
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ABSTRACT

This report summarizes the results of a three-year project aimed at the design and implementation of computer languages to aid in expressing problem solving procedures in several areas of artificial intelligence including automatic programming, theorem proving, and robot planning. The principal results of the project have been the design and implementation of two complete systems, QA4 and QLISP, and their preliminary experimental use. QA4 has been documented in detail in a previous technical report.*¹ This report contains a description of how both QA4 and QLISP have been used; the Preliminary QLISP Manual is attached as an appendix.

*References are listed at the end of this report.

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No useful programming system can be developed without the cooperation of users who are willing to exercise each new experimental release, thereby helping to debug the system and provide valuable criticism to help in designing the next improved version. In addition to the authors of this report and its appendix, the following people helped us by using various undebugged versions of QA4 and QLISP: J. F. Rulifson, N. J. Nilsson, K. Levitt, B. Elspas, C. C. Green, I. Greif, M. Stickel, D. Lenat, D. Shaw, T. Garvey, and A. E. Robinson. The research applications for which QA4 and QLISP have been used are supported at SRI by the following sources: ARPA, under contracts DAHC04-72-C-0008 and DAHC04-72-C-0009; NSF, under grant GJ-eg146; and ONR, under contract N00014-71-C-0294.

