

SUMEX

STANFORD UNIVERSITY
MEDICAL EXPERIMENTAL COMPUTER RESOURCE

RR-00785

COMPETING RENEWAL APPLICATION

Submitted to
**BIOMEDICAL RESEARCH TECHNOLOGY PROGRAM
NATIONAL INSTITUTES OF HEALTH**

June 1, 1985

STANFORD UNIVERSITY SCHOOL OF MEDICINE
Edward H. Shortliffe, Principal Investigator
Edward A. Feigenbaum, Co-Principal Investigator

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE

GRANT APPLICATION

FOLLOW INSTRUCTIONS CAREFULLY

LEAVE BLANK

TYPE	ACTIVITY	NUMBER
REVIEW GROUP		FORMERLY
COUNCIL/BOARD (Month, year)		DATE RECEIVED

1. TITLE OF APPLICATION (Do not exceed 56 typewriter spaces)

SU Medical Experimental Computer Resource (SUMEX)

2. RESPONSE TO SPECIFIC PROGRAM ANNOUNCEMENT ☐ NO ☐ YES (If "YES," state RFA number and/or announcement title)

3. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR

3a. NAME (Last, first, middle) Shortliffe, Edward H. 3b. SOCIAL SECURITY NUMBER [REDACTED]

3c. POSITION TITLE

Associate Professor of Medicine

3d. MAILING ADDRESS (Street, city, state, zip code)

Stanford University School of Medicine
Room TB-105
Stanford, CA 94305

3e. DEPARTMENT, SERVICE, LABORATORY OR EQUIVALENT

Department of Medicine

3f. MAJOR SUBDIVISION

School of Medicine

3g. TELEPHONE (Area code, number and extension)

(415)497-6979

4. HUMAN SUBJECTS

☒ NO☐ YES

☐ Exemption # _____
OR
☐ Form HHS 596 enclosed

5. RECOMBINANT DNA

☒ NO☐ YES

6. DATES OF ENTIRE PROPOSED PROJECT PERIOD

From: 8/1/86

Through: 7/31/91

7. DIRECT COSTS REQUESTED FOR FIRST 12-MONTH BUDGET PERIOD (from page 4)

\$ 1,370,257

8. DIRECT COSTS REQUESTED FOR ENTIRE PROPOSED PROJECT PERIOD (from page 5)

\$ 6,963,247

9. PERFORMANCE SITES (Organizations and addresses)

Stanford University
School of Medicine
Stanford, CA 94305

10. INVENTIONS (Competing continuation application only)

☒ NO☐ YES☐ Previously reported

OR

☐ Not previously reported

11. APPLICANT ORGANIZATION (Name, address, and congressional district)

Stanford University
c/o Sponsored Projects Office
Encina Hall, Room 40
Stanford, CA 94305
Congressional District No. 11

12. TYPE OF ORGANIZATION

☐ Public. Specify ☐ Federal ☐ State ☐ Local☒ Private Nonprofit☐ For Profit (General)☐ For Profit (Small Business)

13. ENTITY IDENTIFICATION NUMBER

IRS No. 94-1156365

14. ORGANIZATIONAL COMPONENT TO RECEIVE CREDIT FOR BIOMEDICAL RESEARCH SUPPORT GRANT

Code ☐ ☐ Description

15. OFFICIAL IN BUSINESS OFFICE TO BE NOTIFIED IF AN AWARD IS MADE (Name, title, address and telephone number.)

Patricia Byers, Contract Officer
Sponsored Projects Office
Encina Hall, Room 40
Stanford, CA 94305
(415)497-2883

16. OFFICIAL SIGNING FOR APPLICANT ORGANIZATION (Name, title, address and telephone number)

PATRICIA BYERS SENIOR CONTRACT OFFICER
Sponsored Projects Office
Encina Hall, Room 40
Stanford, CA 94305
(415)497-2883

17. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR ASSURANCE: I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if a grant is awarded as a result of this application. Willful provision of false information is a criminal offense (U.S. Code, Title 18, Section 1001).

SIGNATURE OF PERSON NAMED IN 3a
(In ink. "Per" signature not acceptable)

Edward H. Shortliffe

DATE

5/24/85

18. CERTIFICATION AND ACCEPTANCE: I certify that the statements herein are true and complete to the best of my knowledge, and accept the obligation to comply with Public Health Service terms and conditions if a grant is awarded as the result of this application. A willfully false certification is a criminal offense (U.S. Code, Title 18, Section 1001).

SIGNATURE OF PERSON NAMED IN 16
(In ink. "Per" signature not acceptable)

Patricia Byers

DATE

5/24/85

STUDY OF THE RESEARCH PLAN

KEY PERSONNEL AND ORGANIZATION

NAME	POSITION	DEPARTMENT
E. Shortliffe	Principal Investigator	Medicine & Computer Science
E. Feigenbaum	Co-Principal Investigator	Computer Science
T. Rindfleisch	Director of Resource	Medicine & Computer Science
C. Jacobs	ONCOCIN Investigator	Medicine
L. Fagan	AIM Liaison	Medicine
W. Yeager	Systems Programmer/Assistant Resource Director	Medicine
B. Buchanan	Professor of Research - Computer Science	Computer Science
B. Hayes-Roth	Senior Research Associate	Computer Science
H. Brown	Senior Research Associate	Computer Science
P. Nii	Research Associate	Computer Science

ABSTRACT OF RESEARCH PLAN: State the application's long-term objectives and specific aims, making reference to their interrelationships of the project, and describe concisely the methodology for achieving these goals. Avoid summaries of past accomplishments and the use of the first person. The abstract is meant to serve as a succinct and accurate description of the proposed work when separated from the application. **DO NOT EXCEED THE SPACE PROVIDED.**

Stanford University is developing and operating a national shared computing resource (SUMEX-AIM), in partnership with the NIH Biomedical Research Technology Program, to explore applications of computer science research in artificial intelligence (AI) to health research. There are three main objectives of the resource: 1) to develop and provide the computing resources and human assistance needed by scientists working on a broad range of biomedical applications of AI; 2) to demonstrate that it is feasible to provide resources and assistance to a national community of researchers, integrating distributed and centralized computing technology with local and national computer communication networks; and 3) to develop the community of scientists interested in working on AI in Medicine (AIM), promoting its growth and vigor through electronic communications. Besides the economic advantages of resource sharing made possible by electronic communications, we believe that a new style of science is emerging from communications-enhanced settings.

AI research is aimed at understanding the principles of computer-based symbolic knowledge representation, reasoning, and problem-solving processes and applying these to increase the computer's effectiveness as a tool in knowledge-intensive fields like medicine and biology. Our research work is driven by real-world scientific applications, chosen because of their relevance to current important biomedical problems and because they expose key underlying AI research issues. Current application areas include programs for differential diagnosis, cancer chemotherapy protocol management, protein structure inference, and drug interaction advice. Resource core research goals include basic research in areas such as blackboard problem-solving architectures and knowledge acquisition; methodologies for clinical decision-making advisors; and the development of network-based Lisp workstation computing environments.

Additional resource users will be selected within available resource capacity with the help of an AIM Executive Committee and Advisory Group on the basis of reviews of the proposed research. Selection criteria will include general scientific interest and merit, relevance to the resource AI mission, and the community orientation of the collaborator.

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