#1 $2 +3 Article: GNU Chess Experiences Learned with Communal Sharing

GNU Chess: Experiences Learned
with Communal Sharing
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(and contributors to the GNU Project)

Limited sharing has characterized the computer chess community for the past two decades. Occasional research articles give hints and suggestions for useful features, but rarely reveal the real details of the critically important advances.   We will here describe an effort underway (titled "GNU Chess") to create a more open and friendly environment of sharing.

GNU Chess is part of Project GNU, a large-scale effort in which the philosophical goals are far-reaching. We will not go into any great depth about these goals as they relate to the larger project, because these are described elsewhere [1]. However, we will mention the basic issues and the changes we hope to encourage.

The start of the GNU Chess project was a natural result of the experiences gleaned in writing a chess program. While the author was at a progressive academic location [2], he was able to conceive the idea of a communal chess program only after much heartache. During the period of writing the initial version (which has since undergone many improvements and whole revisions), it became clear that the best features and most useful hints, the very best of the heuristics, were hidden and difficult to find in the literature.

Sprinkled across many books, research papers, magazine articles, accumulated in the community, during the past 25 years, there was literally a void of true, empirical programs. Locating usable programs was difficult. Many programs were the result of academic work in "ivory towers", and hence were inaccessible to the common man. Other programs were sequestered in research think-tanks. Naturally, developers of commercial programs carefully guarded their source in order to protect their investment. On the other hand, a few chess program source listings had actually been published, but these were not really very strong, often written in a non-general language, and frequently more pedantic than practical.

The idea of a reasonably strong communal program solidified. When we refer to a communal program, we do not regard this as public-domain software. Rather, we refer to a program which is under the shared authority of a number of individuals, the principal contributors. These individuals have experienced and realized the positive results of a sharing community and the rapid improvements that come through contributing in such a community. Further, these individuals devote time and energy to coordinating the contributions of other individuals. While they exercise a certain editorial right, this is usually not exercised arbitrarily; instead, a discussion is often undertaken.

Eventually, a working C program that played chess was available. The coordinating institution for Project GNU, accepted our suggestion of inclusion of a chess program in the GNU distribution. Initial distribution of GNU Chess commenced in October of 1986. Interest in the project increased rapidly.

Contributions came in from many places and people. Interfaces to X-windows and SUN-windows were donated, thus allowing very fancy chess fonts on bit-mapped screens. Also, contributions involving large portions of opening books such as MCO and collections of master games were added to the

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distribution.   Additionally, tree-search modifications and heuristics were provided, and occasionally even entire rewrites.

The program advanced in strength by several USCF class intervals during a period of less than one year. During this time, many unusual features and enhancements were added to the program, usually under the coordination of two or more people, with one working in a distant-advisory capacity to the other. Frequently, graduate students would give up significant time from their thesis work to devote energy to contributing. Their corporate counterparts would often give up project time to make their donation.

Contributors would often enter the project in a very forceful way and then having made their contribution, learn the viability of communal sharing once others had stepped in and contributed to them, thus providing considerable reinforcement. Frequently, contributors would then go into "hibernation" for a long period of time, but most of them remained open to contributing and were helpful when asked to reprogram their particular contribution in a more recent version.

GNU Chess has made great strides in relatively little time.   It has run on many different hardware architectures and has been compiled by a number of C compilers. A sampling of the computers on which the program has run is: National 32032, Vax 11/750, 8550, 8600, 8650, Motorola 68020, CCI 5/32, CCI 6/32 (tahoe), Cray XMP, SUN Sparc-1.

It is our belief that GNU Chess will stimulate graduate research in computer chess theory and practice. When students are able to easily obtain a state-of-the-art program in order to test out their ideas, they will no longer need to reinvent the wheel. The students will be able to investigate their research areas much more thoroughly, because they will spend more time on the specific research areas they are concerned about. Basically, GNU Chess "frees up" time in order to get on to more fundamental issues.

We also feel that as other researchers gain trust in the GNU Chess project, they will be more likely to release their results directly and rapidly, through journal articles, or directly to the GNU project, and in fact become contributors and join the present list. At the very least, a communal, ever-growing program will encourage the few "closeted" researchers to be somewhat more open in their approach to disseminating advances.

In whatever form it takes, the progress toward elaboration of machine chess is ongoing, and we hope that GNU chess will be helpful to the community. Copies of GNU Chess source and "book", as well as additional experimental code are available from the Free Software Foundation [3] or the author [6].

[1] The GNU Manifesto, Richard Stallman, Free Software Foundation, Inc.

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