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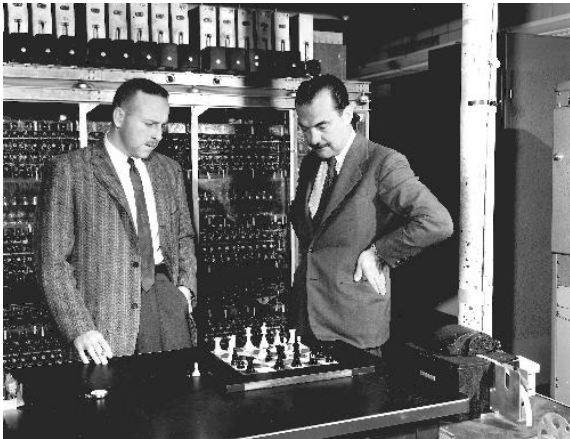
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MANIAC I,

the chess program on a [MANIAC I](#) (Mathematical Analyzer, Numerical Integrator, and Computer or Mathematical Analyzer, Numerator, Integrator, and Computer), the machine designed and build by a team around [John von Neumann](#) and [Nicholas Metropolis](#) at the [Los Alamos Scientific Laboratory](#). The MANIAC I chess program was written in [1956](#) by a group of H-bomb researchers, [Stanislaw Ulam](#), [Paul Stein](#), [Mark Wells](#), [James Kister](#), [William Walden](#) and [John Pasta](#). Due to lack of computing power, only a chess variant with a reduced 6 x 6 board was implemented, without bishops, [double-step](#) for pawns and [castling](#) , later called [Los Alamos Chess](#).

Photos



[Los Alamos](#) scientists [Paul Stein](#) (left) and [Nick Metropolis](#) playing chess with the MANIAC computer ^[1]

Description

MANIAC I performed a [brute-force Shannon Type A strategy](#), pure [minimax](#). During game play with 11,000 ops./sec, it searched 4 [plies](#) deep in about 12 minutes to find its best move. The program was written in 600 words of machine code. Its [evaluation](#) took [material](#) and [mobility](#) under account, both [incrementally updated](#) during [make](#) and [unmake move](#) ^[2].

Quotes

Quote from *Chronology of Computing* compiled by [David Singmaster](#) ^[3]
A group at Los Alamos, based on Kister, Stein, Ulam, Walden and Wells, follows up a brief Russian reference to a chess program for [BESM](#) ^[4]. The Los Alamos group writes a program for the MANIAC I to play a reduced game of chess - using a 6 x 6 board without bishops.

Fred Guterl

Quote by Fred Guterl from *Silicon gambit* ^[5] :

The government laboratory in Los Alamos, New Mexico, got hold of one of the first computers, MANIAC I, so that Ulam and the other H-bomb researchers wouldn't have to stay up nights solving their voluminous equations with pencil and paper. Ulam, who described himself modestly as a "fair" chess player, couldn't resist putting the machine to work

on a project of somewhat less import to coldwar strategy. Together with physicist [Paul Stein](#), he wrote one of the first chess-playing programs.

Roger Snodgrass

Roger Snodgrass in *LANL: The Rest of the Story* on MANIAC and [Mark Wells](#) ^[6]

Among the interesting tidbits in Wells article are stories about a chess-playing program on MANIAC. MANIAC's limited memory restricted a play to board that was six squares by six squares and no bishops...

"Even then," he wrote, "moves averaged about 10 minutes for a two-move, look-ahead strategy." "That quickly became three moves, four moves, five moves ahead," Wells said Tuesday, adding the current capability was at least 12 moves ahead.

His essay also includes an anecdote about a moment when the computer seemed to have a mind of its own. When Princeton physicist [Martin Kruskal](#) checkmated the MANIAC on the 38th move of a game, the machine responded with an illegal move. "We were dumbfounded for a while, until we traced the trouble and realized that the program had never been taught to resign," Wells wrote. Facing no moves, the machine was stuck in a loop and the loop changed the program.

"You might call that a learning program," he recalled.

Selected Games

MANIAC I played a game against a young lady who had learnt the game a week earlier. It was the first time a human had lost to a computer in a game of intellectual skill ^[7]:

```
[Event "6x6 Los Alamos Chess"]
[Site "Los Alamos"]
[Date "1956.???.?"]
[Round "?"]
[White "MANIAC I"]
[Black "Human"]
[Result "1-0"]
```

```
1.d3 b4 2.Nf3 d4 3.b3 e4 4.Ne1 a4 5.bxa4 Nxa4 6.Kd2 Nc3 7.Nxc3 bxc3+ 8
```

```
.Kd1 f4
9.a3 Rb6 10.a4 Ra6 11.a5 Kd5 12.Qa3 Qb5 13.Qa2+ Ke5 14.Rb1 Rxa5 15.Rxb
5 Rxa2
16.Rb1 Ra5 17.f3 Ra4 18.fxe4 c4 19.Nf3+ Kd6 20.e5+ Kd5 21.exf6Q Nc5 22
.Qf6xd4+
Kc6 23.Nf3-e5 1-0
```

See also

- [Acronym](#)
- [Disease](#)
- [History of Computer Chess](#)
- [Nils Barricelli](#) - [The Birth of the Computer](#)

Selected Publications

- [Paul Stein](#), [Stanislaw Ulam](#) (1957). *Experiments in chess on electronic computing machines*. Chess Review, 13 January 1957.
- [James Kister](#), [Paul Stein](#), [Stanislaw Ulam](#), [William Walden](#), [Mark Wells](#) (1957). [Experiments in Chess](#). *Journal of the ACM*, Vol. 4, No. 2
- [Allen Newell](#), [Cliff Shaw](#), [Herbert Simon](#) (1958). *Chess Playing Programs and the Problem of Complexity*. *IBM Journal of Research and Development*, Vol. 4, No. 2, pp. 320-335. Reprinted (1963) in [Computers and Thought](#) (eds. [Edward Feigenbaum](#) and [Julian Feldman](#)), pp. 39-70. McGraw-Hill, [pdf](#)
- [Paul Stein](#) (1986). [Experiments in Chess on Electronic Computing Machines: Some Early Efforts](#). in [Stanislaw Ulam](#) (1986). [Science, Computers, and People - From the Tree of Mathematics](#). [Birkhäuser](#)
- [Herbert L. Anderson](#) (1986). *Metropolis, Monte Carlo, and the MANIAC*. [Los Alamos Science](#), [pdf](#)

External Links

Chess Program

- [Classic Computer Chess - ... The programs of yesteryear](#) by [Carey](#), hosted by the [Internet Archive](#)
- [Silicon gambit](#) by [Fred Guterl](#), [Discover](#), June 01, 1996
- [LANL: The Rest of the Story](#) by [Roger Snodgrass](#), Los Alamos Monitor Editor, July 16, 2008
- [MANIAC I - Mensch, Los Alamos, 1956 - Wikipedia.de](#) (German)

Computer

- [MANIAC I from Wikipedia](#)
- [BRL Report 1961 - MANIAC I](#) ^[9]

Misc

- [maniac - Wiktionary](#)
- [mania - Wiktionary](#)
- [Mania from Wikipedia](#)
- [Volker Kriegel](#) & [Mild Maniac Orchestra](#) - Bahia Next Year, [NDR Hamburg](#) 1976, [YouTube](#) Video
[Wolfgang Schlüter](#), Volker Kriegel, [Curt Cress](#), [Hans Peter Ströer](#), [Nippy Noya](#), [Alan Skidmore](#), [Rainer Brüninghaus](#)

References

1. [^] [Los Alamos scientists Paul Stern \(left\) and Nick Metropolis playing chess with the MANIAC computer](#), 1956, Courtesy of [Los Alamos National Laboratory](#), hosted by [The Computer History Museum](#)
2. [^] [Allen Newell](#), [Cliff Shaw](#), [Herbert Simon](#) (1958). *Chess Playing Programs and the Problem of Complexity*. IBM Journal of Research and Development, Vol. 4, No. 2, pp. 320-335. Reprinted (1963) in [Computers and Thought](#) (eds. [Edward Feigenbaum](#) and [Julian Feldman](#)), pp. 39-70. McGraw-Hill, [pdf](#), pp. 45 Table I Comparison of Current Chess Programs
3. [^] [Chronology of Computing](#) compiled by [David Singmaster](#)
4. [^] "There are two other explorations between 1951 and 1956 of which we are aware - a hand simulation by [F. Mosteller](#) and a Russian program for [BESM](#). Unfortunately, not enough information is available on either to talk about them, so we must leave a gap in the history between 1951 and 1956" - footnote 1 in [Allen Newell](#), [Cliff Shaw](#), [Herbert Simon](#) (1958). *Chess Playing Programs and the Problem of Complexity*. IBM Journal of Research and Development, Vol. 4, No. 2, Reprinted (1963) in [Computers and Thought](#) (eds. [Edward Feigenbaum](#) and [Julian Feldman](#)), pp. 47. McGraw-Hill, [pdf](#)
5. [^] [Silicon gambit](#) by [Fred Guterl](#), [Discover](#), June 01, 1996
6. [^] [LANL: The Rest of the Story](#) by [Roger Snodgrass](#), Los Alamos Monitor Editor, July 16, 2008
7. [^] [From the Z1 to the Singularity – Zuse's 100th birthday](#) by [Frederic Friedel](#), [ChessBase News](#), June 22, 2010
8. [^] [Re: Old programs CHAOS and USC](#) by [Dann Corbit](#), [CCC](#), July 11, 2015
9. [^] from [Martin H. Weik](#) (1961). [A Third Survey of Domestic Electronic Digital Computing Systems](#). Report No. 1115

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History	Jan 2, 2018
James Kister	Feb 23, 2015
John Pasta	Feb 22, 2015
John von Neumann	May 8, 2017
Los Alamos National Laboratory	Sep 16, 2015

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MANIAC I	Nov 17, 2016
Mark Wells	Feb 23, 2015
Mathematician	Apr 9, 2018
Nils Barricelli	Nov 29, 2017
Paul Stein	Feb 23, 2015
Stanislaw Ulam	Aug 11, 2016
William Walden	Jun 3, 2015
wiedza-zebine : nb Nils Aall Barricelli	Apr 29, 2010

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