

[Home](#) * [People](#) * **Peter W. Frey**



Peter W. Frey ^[3]

Peter W. Frey, an American [psychologist](#), computer scientist and [Professor Emeritus](#) at [Northwestern University](#). At the Department of Psychology at Northwestern his research focused on [pattern recognition](#), [machine learning](#), computer chess and computer-based decision systems. He is co-founder of *Pattern Recognition Systems*. Peter W. Frey is editor of and contributor to [Chess Skill in Man and Machine](#) ^[1], the definitive text on computer chess ^[2].

Table of Contents

[Biography](#)

[Brute-force and AI](#)

[Chess 0.5](#)

[Odin](#)

[See also](#)

[Selected Publications](#)

[1976 ...](#)

[1980 ...](#)

[1990 ...](#)

[2000 ...](#)

[External Links](#)

[References](#)

[What links here?](#)

Biography

from *Pattern Recognition* ^[4]:

Peter co-founded Pattern Recognition in 1991 and served as Chief Research Scientist. A Professor Emeritus at Northwestern University, he served on the faculty for 30 years, teaching in the Computer Science department, the Psychology department, and the [Kellogg Graduate School of Management](#). While at Northwestern, his research focused on machine learning and computer-based decision systems. He is the author of over fifty academic publications and several commercial software products. Peter graduated [magna cum laude](#) from [Yale University](#) and earned his Ph.D. in [experimental psychology](#) at the [University of Wisconsin](#).

Brute-force and AI

During the 70s and 80s, Peter W. Frey researched and wrote on computer chess with further impact on the development. In disagreement with the AI-establishment and their decreasing interest in ([brute force](#)) computer chess as the former [Drosophila](#) of [AI](#) ^[5], and unlike perhaps his colleagues [De Groot](#) and [Gobet](#), he was an advocate of brute force [Shannon Type-A](#) programs. His suggestion to [Slate](#) and [Atkin](#) triggered some thoughts on the matter, and as a result they dumped selective searching in 1973 in favor of full-width searching in [Chess 4.0](#) ^[6].

Chess 0.5

In 1978, Peter W. Frey wrote a didactic program in [Pascal](#) along with [Chess](#) author [Larry Atkin](#), which was published as [Chess 0.5](#) in [Byte Magazine](#) ^[7], and re-published on-line in 2005, available from [Scott A. Moore's](#) sites ^{[8] [9]}.

Odin

Further working with Larry Atkin, Peter W. Frey is co-author of the strong commercial [Othello](#)



program *Odin* ^[10] ^[11], which ran as module in the [Chafitz Modular Game System](#) and the [Applied Concepts Great Game Machine](#) ^[12].

[Odin](#), [Thor](#) and [Freyr](#) ^[13]

See also

- [Brute-Force](#)
- [Chess 0.5](#)
- [Chess 4.x](#)
- [Cognition](#)
- [Pattern Recognition](#)
- [Psychology](#)

Selected Publications

^[14]

1976 ...

- [Peter W. Frey](#), [Peter Adesman](#) (1976). [Recall Memory for Visually Presented Chess Positions](#). [Memory & Cognition](#), Vol. 4, No. 5, 541-547
- [Peter W. Frey](#) (ed.) (1977). [Chess Skill in Man and Machine](#). Springer, New York, N.Y. 2nd ed. 1983. ISBN 0-387-90815-3.
[Peter W. Frey](#) (1977). *An Introduction to Computer Chess*. [Chess Skill in Man and Machine](#) pp. 54-81
- [Peter W. Frey](#), [Larry Atkin](#) (1978). [Creating a Chess Player](#). An Essay on Human and Computer Chess Skill, [BYTE, Vol. 3, No. 10](#), pp. 182-191. [pdf](#) from [The Computer History Museum](#)
- [Peter W. Frey](#), [Larry Atkin](#) (1978). *Creating a Chess Player, Part 2: Chess 0.5*. [BYTE, Vol. 3, No. 11](#)
- [Peter W. Frey](#), [Larry Atkin](#) (1978). *Creating a Chess Player, Part 3: Chess 0.5 (continued)*. [BYTE, Vol. 3, No. 12](#)
- [Peter W. Frey](#), [Larry Atkin](#) (1979). [Creating a Chess-Player, Part 4: Thoughts on Strategy](#). In [Blaise W. Liffick](#) (ed.), [The Byte Book of Pascal](#), pp. 143-155. Byte Publications, also [BYTE, Vol. 4, No. 1](#)
- [Allan Gottlieb](#), [Peter W. Frey](#), [David Levy](#), [Johann Joss](#) (1979). Letters on *Handicapping Computer Chess Programs*, [ICCA Newsletter, Vol. 2, No. 1](#)

1980 ...

- [Peter W. Frey](#) (1980). *Machine Othello*. [Personal Computing, Vol. 4, No. 7](#), pp. 89
- [Peter W. Frey](#) (1983). *The Alpha-Beta Algorithm: Incremental Updating, Well-Behaved Evaluation Functions, and Non-Speculative Forward Pruning*. *Computer Game-Playing* (ed. [Max Bramer](#)), pp. 285-289. Ellis Horwood Limited Publishers, Chichester.
- [Peter W. Frey](#) (1983). *An Introduction to Computer Chess*. [Chess Skill in Man and Machine](#) (ed. P.W. Frey), 2nd edition, Springer-Verlag, New York. ISBN 0-387-90790-4.
- [Peter W. Frey](#) (1985). *An Empirical Technique for Developing Evaluation Functions*. [ICCA Journal, Vol. 8, No. 1](#)
- [Peter W. Frey](#) (1986). *Algorithmic Strategies for Improving the Performance of Game-Playing Programs*. In [Doayne Farmer](#), [Alan Lapedes](#), [Norman Packard](#), [Burton Wendroff](#) (Ed.) (1986). *Evolution, Games and Learning: Models for Adaptation in Machines and Nature*. Proceedings of the Fifth Annual International Conference of the Center, [Elsevier](#)
- [Peter W. Frey](#) (1986). *Fuzzy Production Rules in Chess*. [ICCA Journal, Vol. 9, No. 4](#)
- [Peter W. Frey](#) (1986). *A Bit-Mapped Classifier*. [BYTE, Vol. 11, No. 12](#)

1990 ...

- [Peter W. Frey](#), [David Slate](#) (1991). [Letter Recognition Using Holland-style Adaptive Classifiers](#). *Machine Learning Vol 6 #2 March 91*, [pdf](#)
- [Peter W. Frey](#) (1991). *Memory-Based Expertise: Computer Chess vs. AI*. [ICCA Journal, Vol. 14, No. 4](#)

2000 ...

- [David Slate](#), [Peter W. Frey](#) (2009). *Recursive Binary Partitioning, Old Dogs with New Tricks*, [KDD Conference 2009](#), slides as [pdf](#) ^[15]

External Links

- [Peter W Frey - Kaggle](#)
- [Pattern Recognition - Peter Frey, PhD](#)
- [Peter W Frey's Page - Data Science Central](#)
- [Commodore 64/128 Old Computer Chess Game Collection - Chess 7.0, Approaches to Chess by Peter Frey](#) hosted by [The Spacious Mind](#)

References

1. [^] [Peter W. Frey](#) (ed.) (1977). [Chess Skill in Man and Machine](#), Springer-Verlag, New York, N.Y. 2nd ed. 1983. ISBN 0-387-90815-3.
2. [^] [Commodore 64/128 Old Computer Chess Game Collection - Chess 7.0, Approaches to Chess by Peter Frey](#) hosted by [The Spacious Mind](#)
3. [^] [Peter W Frey - Kaggle](#)

4. [^ Pattern Recognition - Peter Frey, PhD](#)
5. [^ Peter W. Frey \(1991\)](#). *Memory-Based Expertise: Computer Chess vs. AI*. [ICCA Journal, Vol. 14, No. 4](#)
6. [^ David Slate](#) and [Larry Atkin \(1977\)](#). *CHESS 4.5 - The Northwestern University Chess Program*. [Chess Skill in Man and Machine](#), reprinted (1988) in [Computer Chess Compendium](#)
7. [^ Larry R. Atkin Magazine articles](#)
8. [^ Chess 0.5, Release 1 - 2005-05-30](#)
9. [^ Byte Chess 0.5 source code](#)
10. [^ Odin - The Othello Wiki Book Project](#)
11. [^ Commodore 64/128 Old Computer Chess Game Collection - Chess 7.0](#) from [The Spacious Mind](#)
12. [^ Welcome to the Great-Game Machine Workshop](#)
13. [^ The Skog Church Tapestry](#) portion possibly depicting Odin, Thor and Freyr or three Christian kings on the 12th century, [Trifunctional hypothesis from Wikipedia](#)
14. [^ ICGA Reference Database](#) (pdf)
15. [^ Results of the KDD cup 2009](#)

What links here?

Page	Date Edited
ACM 1974	Jan 19, 2018
ACM 1975	Jan 19, 2018
Alpha-Beta	Jan 28, 2018
Applied Concepts	Dec 25, 2017
Artificial Intelligence	Apr 9, 2018
Attack and Defend Maps	Nov 5, 2016
Ben Mittman	Jan 2, 2017
Blockage Detection	Oct 19, 2017
Byte Magazine	Nov 20, 2016
Chafitz	Dec 25, 2017
Chafitz Modular Game System	Dec 25, 2017
Chess	Jan 21, 2018
Chess (Program)	Dec 22, 2017
Chess 0.5	Nov 20, 2016
Chess 0.5X	Nov 5, 2015
Chess Skill in Man and Machine	Nov 12, 2014
Chunking	Jun 12, 2017
Cognition	Dec 8, 2017
Corresponding Squares	Oct 9, 2017
Dartmouth CP	Jan 19, 2018
David Levy	Jan 3, 2017
David Slate	Jul 19, 2016
David Wilkins	Mar 2, 2016
Eliot Hearst	Nov 7, 2012
Engines	Mar 10, 2018

Page	Date Edited
Evaluation	Feb 1, 2018
Great Game Machine	Dec 20, 2017
Hiarcs	Feb 25, 2018
ICGA Journal	Dec 21, 2017
Incremental Updates	Sep 6, 2017
Johann Joss	May 30, 2016
Kaissa	Apr 9, 2018
Ken Thompson	Sep 8, 2017
Knowledge	Jul 22, 2017
Larry Atkin	Jan 7, 2016
Larry Harris	Apr 3, 2013
Marcus Wagner	Jan 7, 2016
Mark Uniacke	Dec 12, 2016
Material	Mar 31, 2018
Material Hash Table	Apr 3, 2014
Memory	Dec 8, 2017
Merlin	Jan 20, 2018
Monroe Newborn	Dec 23, 2017
Move Generation	Jan 29, 2018
Neil Charness	Oct 2, 2014
Northwestern University	Sep 5, 2017
Oracle	Sep 4, 2016
Othello	Jan 4, 2018
Paradise	Nov 19, 2014
Pattern Recognition	Sep 8, 2017
Pawn Endgame	Oct 11, 2017
People	Feb 28, 2018
Personal Computing	Dec 27, 2017
Peter W. Frey	Dec 25, 2017
Playing Strength	Mar 31, 2018
Pruning	Jan 1, 2018
Recommended Reading	Nov 17, 2017
Recursion	Nov 18, 2017
Russell M. Church	Nov 7, 2012
Search	Feb 1, 2018
Shy	Jul 19, 2016
Sortie	Jan 5, 2016
Stephen F. Becker	Jan 3, 2016
Strategy	Jan 18, 2018
Tom Likens	Mar 7, 2017
Tony Marsland	Nov 27, 2017
Transposition Table	Apr 19, 2018
WCCC 1974	Jan 19, 2018

[Up one level](#)