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CHREST, (Chunk Hierarchy and REtrieval STructures)

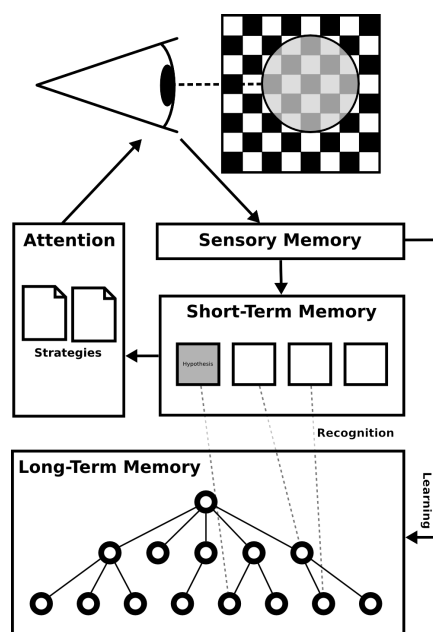
a [cognitive architecture](#) that models human [perception](#), [learning](#), [memory](#), and [problem solving](#). It is distinctive in its emphasis on the importance of perception and [attention](#), and in following human constraints such as limitations on [short-term memory](#), [chunking](#) and processing speed. [Fernand Gobet](#) is principal investigator of CHREST, influenced by the earlier [EPAM](#) model, originally designed by [Herbert Simon](#) and [Edward Feigenbaum](#) ^[1] ^[2].

CHREST consists of a blending of ideas proposed in earlier computer models of different aspects of chess ^[3], [Mater](#) by [Baylor](#) and [Simon](#) ^[4], [Perceiver](#) by [Barenfeld](#) and Simon ^[5], and [MAPP](#) by [Gilmartin](#) and Simon ^[6] and originated from modeling work on chess expertise.

CHUMP

One application of CHREST was the [pattern learning](#) chess program [CHUMP](#) by Gobet and [Peter Jansen](#) ^[7], where an [eye movement](#) simulator, the only part of the system where the rules of the game influence the learning process, scans the board, and directs its attention to [pieces](#) and [squares](#) it expects, given the current node in its discrimination net, attack, defense and [proximity relations](#) between pieces.

Architecture



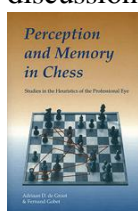
An overview of the architecture of CHREST [\[8\]](#)

See also

- [CHUMP](#)
- [Chunking](#)
- [EPAM](#)
- [MAPP](#)
- [Perceiver](#)

Publications

- [Fernand Gobet](#) (1993). [A Computer Model of Chess Memory](#). Proceedings of the 15th Annual Meeting of the Cognitive Science Society, pp. 463-468.
- [Fernand Gobet](#), [Peter Jansen](#) (1994). [Towards a Chess Program Based on a Model of Human Memory](#). [Advances in Computer Chess 7](#)
- [Adriaan de Groot](#), [Fernand Gobet](#) (1996). [Perception and memory in chess](#). *Heuristics of the professional eye*. Assen: Van Gorcum, The Netherlands. ISBN 90-232-2949-5. Chapter 9; A discussion: Two authors, two different views? [word reprint](#).



- [Fernand Gobet](#), [Herbert Simon](#) (2000). [Five Seconds or Sixty? Presentation Time in Expert](#)

[Memory](#). [Cognitive Science](#), Vol. 24, No. 4

- [Fernand Gobet](#), [Peter Lane](#), [Steve Croker](#), [Peter C-H. Cheng](#), [Gary Jones](#), [Iain Oliver](#), [Julian M. Pine](#) (2001). [Chunking mechanisms in human learning](#). *Trends in Cognitive Sciences*, Vol. 5, No. 6
- [Fernand Gobet](#) (2001). *Is Experts' Knowledge Modular?* Proceedings of the 23rd Meeting of the [Cognitive Science Society](#), [pdf](#)
- [Pertti Saariluoma](#), [Tei Laine](#) (2001). [Novice construction of chess memory](#). [Scandinavian Journal of Psychology](#), Vol. 42, No. 2
- [Fernand Gobet](#), [Peter Lane](#) (2004). [CHREST tutorial: Simulations of human learning](#). [CogSci 2004](#)
- [Fernand Gobet](#) (2005). [Chunking Models of Expertise: Implications for Education](#). *Applied Cognitive Psychology*, Vol. 19, No. 2
- [Fernand Gobet](#) (2007). *Chunk hierarchies and retrieval structures: Comments on Saariluoma and Laine*. *Scandinavian Journal of Psychology*, 42. [pdf](#)
- [Richard L. Smith](#), [Fernand Gobet](#), [Peter Lane](#) (2007). [An Investigation into the Effect of Ageing on Expert Memory with CHREST](#). UKCI 2007
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- [Roy W. Roring III](#) (2008). *Reviewing Expert Chess Performance: A Production-Based Theory of Chess Skill*. Ph.D. thesis, advisor [Neil Charness](#), [Florida State University](#)
- [Richard L. Smith](#), [Fernand Gobet](#), [Peter Lane](#) (2009). [Checking chess checks with chunks: A model of simple check detection](#). [ICCM 2009](#)

External Links

- [CHREST from Wikipedia](#)
- [CHREST Home](#)
- [Design of CHREST](#)
- [CHREST - Centre for Research in Development, Instruction and Training - University of Nottingham](#)
- [Flora Purim](#) - Open Your Eyes You Can Fly, [YouTube](#) Video
[Flora Purim](#), [George Duke](#), [David Amaro](#), [Alphonso Johnson](#), [Airto Moreira](#), [Leon "Ndugu" Chanler](#)

References

1. [^] [Edward Feigenbaum](#) (1959). [An Information Processing Theory of Verbal Learning](#). [RAND Paper](#)
2. [^] [Edward Feigenbaum](#), [Herbert Simon](#) (1984). [EPAMlike models of recognition and learning](#). [Cognitive Science](#), Vol. 8, 305-336, [pdf](#)
3. [^] [Fernand Gobet](#) (1993). [A Computer Model of Chess Memory](#). Proceedings of the 15th Annual Meeting of the Cognitive Science Society, pp. 463-468
4. [^] [George W. Baylor](#), [Herbert A. Simon](#) (1966). [A chess mating combinations program](#). [AFIPS](#)
5. [^] [Herbert Simon](#), [Michael Barenfeld](#) (1969). [Information-processing analysis of perceptual processes in problem solving](#). *Psychological Review*, Vol. 76, No. 5
6. [^] [Herbert Simon](#), [Kevin J. Gilmartin](#) (1973). *A Simulation of Memory for Chess Positions*.

Cognitive Psychology, Vol. 5, pp. 29-46.

7. [^ Fernand Gobet, Peter Jansen \(1994\). Towards a Chess Program Based on a Model of Human Memory. Advances in Computer Chess 7](#)

8. [^ Design of CHREST](#)

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