

Les logiciels





Les logiciels



« Go on a computer ? - In order to program a computer to play a reasonable game of Go, rather than merely a legal game – it is necessary to formalise the principles of good strategy, or to design a learning programme. The principles are more qualitative and mysterious than in chess and depend more on judgement. Si I think it will be ever more difficult to programme a computer to play a reasonable game of Go than of chess ». (Irvin John Good, 1965)

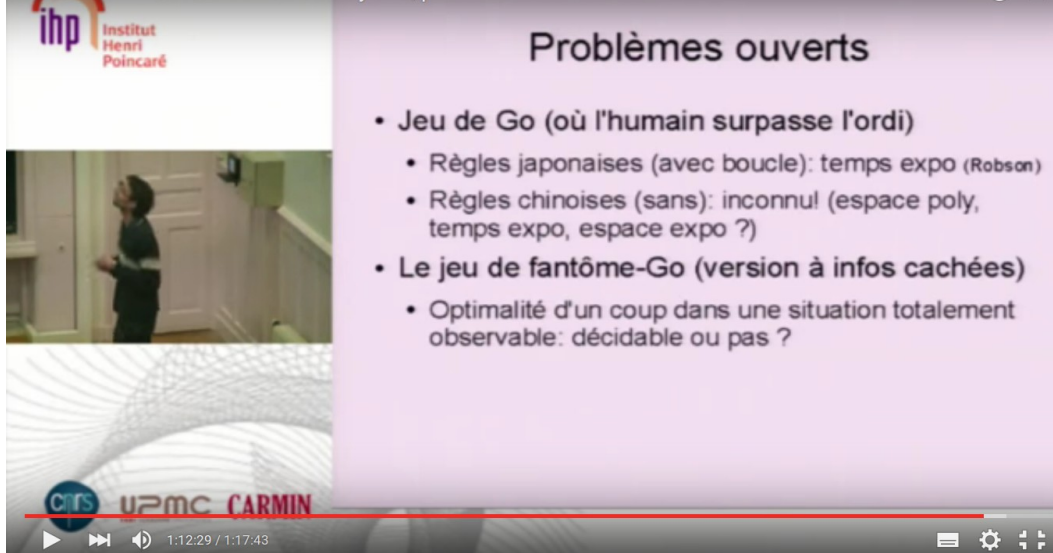


Les logiciels

The Anticipation Game: l'homme, le jeu et la machine | Manuel Bevand | TEDxEcolePolytechnique



Math Park - 24/05/2014 - Olivier Teytaud, processus décisionnels de Markov



DIFFICULTY OF VARIOUS GAMES FOR COMPUTERS		
EASY		
SOLVED FOR ALL POSSIBLE POSITIONS		TIC-TAC-TOE
		NIM
SOLVED FOR STARTING POSITIONS		GHOST (1989)
		CONNECT FOUR (1995)
COMPUTERS CAN BEAT TOP HUMANS		GOMOKU
		CHECKERS (2007)
		SCRABBLE
	4	COUNTERSTRIKE
COMPUTERS STILL LOSE TO TOP HUMANS (BUT FOCUSED R&D COULD CHANGE THIS)		BEER PONG (UUC ROBOT)
		REVERSI
		CHESS
		JEOPARDY!
COMPUTERS MAY NEVER OUTPLAY HUMANS		STARCRRAFT
		POKER
		ARIMAA
		GO
HARD		MAO
		SEVEN MINUTES IN HEAVEN
		SNAKES AND LADDERS
		CALVINBALL



Les logiciels



Game	Game depth	Game branch.	All positions	All games	Solved
Tic-Tac-Toe	9	5	$2 \cdot 10^4$	10^{11}	y
Checkers	...	1-8	$5 \cdot 10^{20}$	10^{40}	y
Chess	~80	~35	10^{50}	10^{120}	n
Go	~250	~150	10^{170}	10^{600}	n

2016-02-18 Claire Rioualen - Bioinfo meeting

- Atoms in human body: $\sim 10^{27}$
- Bacteria on Earth: $\sim 10^{30}$
- Atoms in universe: $\sim 10^{80}$



Number of legal Go positions ♦

♦ , january 20

John Tromp has answered the question Go players had for so many years: "How many legal positions can be constructed on a 19x19 board?" Well, his answer is as follows:

208168199381979984699478633344862770286522453884530548425639456820927419612738015378525648451698
519643907259916015628128546089888314427129715319317557736620397247064840935 positions.

Please read John's very interesting [report](#)

GOBASE.org





Les logiciels

- Les années 1960 :

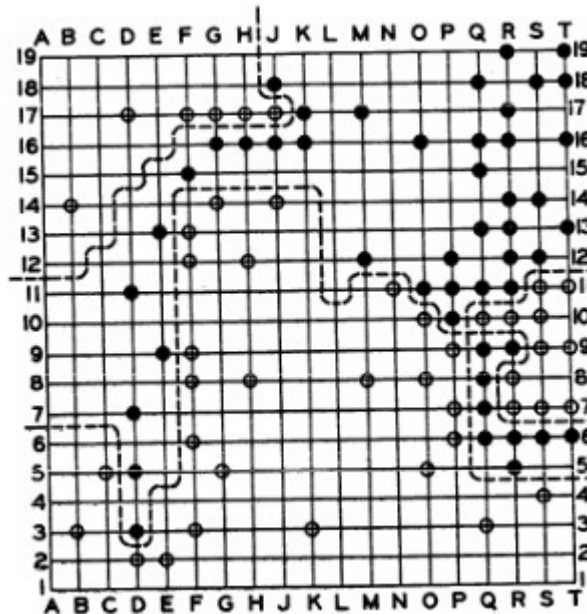
A model of visual organization for the game of GO

by ALBERT L. ZOBRIST

University of Wisconsin
Madison, Wisconsin

The program

The program is written in ALGOL for the Burroughs B5500 computer. Interaction is provided by remote teletypes. Each move requires 5 to 8 seconds of central



BIBLIOGRAPHY

- 1 H REMUS
Simulation of a learning machine for playing GO
Proc IFIP Congress 1962
- 2 E THORPE W WALDEN
A partial analysis of GO
The Computer Journal Vol 7 No 3 1964
- 3 I GOOD
The mystery of GO
New Scientist January 21 1965 427
- 4 O KORSCHOLT
The theory and practice of GO
Tuttle Rutland Vt 1966
- 5 E LASKER
GO and GO-MOKO, the oriental board games
Dover New York 1960
- 6 A SAMUEL
Some studies of machine learning using the game of checkers
IBM Journal of Research and Development Vol 3 No 3 1959
- 7 A NEWELL
The chess machine
Proc Western J C C 1955
- 8 C SHANNON
Programming a digital computer for playing chess
Philosophy Magazine March 1950
- 9 R GREENBLATT D EASTLAKE III S CROCKER
The Greenblatt chess program
Proc F J C C 1967
- 10 P GREENE
Networks which realize a model for information representation
Transactions of the University of Illinois Symposium on Self-Organization 1961
- 11 W KOHLER
Gestalt psychology
Liveright New York 1947

<https://www.computer.org/csdl/proceedings/afips/1969/5073/00/50730103.pdf>

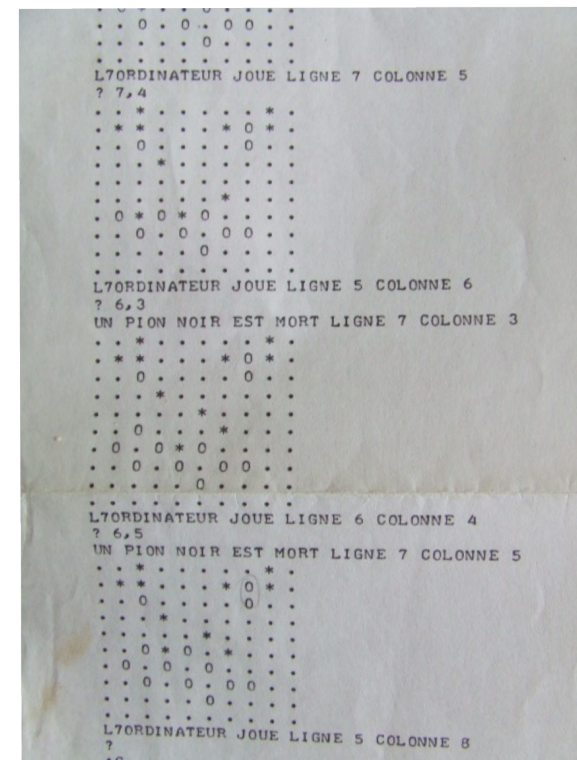


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- Les années 1970 :

- 1974 : Bruce Wilcox
 - Interim.2
- 1974/1975 : Marc Jegou (Paris Dauphine) →
 - Goban 10x10
- 1976 : David Benson
 - propose un formalisme dans lequel il démontre des théorèmes sur le go.
 - Système résolvant des problèmes (*tsumego*)
- 1976 : *Recherches en sciences cognitives [Reitman]*





Les logiciels



- Les années 1980 :

- [Miller 1981] Wally sur KIM-1
- [RFG 1983] Logiciel sur Apple II (*jugé mauvais*)
- 1985 : Bruce Wilcox 1 (BW1)
- 1987 :
 - Travail sur goban 7x7 => applications médicales
 - Revue « Computer Go »
- [Krasek 1988] Star of Go
« Heuristics in the life and death algorithms – Computer go »
- [Boon 1989] Goliath « Pattern Matching of Goliath »

1989 : premières olympiades





Les logiciels



- Les années 1990 :

...

- [Wolf 90] *Go Tools*, [Chen 90] *Go Intellect*, [Boon 90] « A pattern matcher for Goliath »
- [Kierulf 90] « Smart game board and Go explorer : A case study in software and Knowledge engineering »
- **[Boon 91] « Overzicht van de ontwikkeling van een Go spelend programma » (thèse)**
- [Berlekamp 91] « Introductory overview of mathematical Go endgames »
- [Pell 91] « Exploratory learning in the Game of Go »
- [Soutamine 91] « Machine learning, Gameplay and Go »
- [Enderson 91] « The Golem go program »
- [Yang & Yao 91] « Cluster dimensionality in the game of go »
- [Wolfe 91] « Mathematics of Go : Chilling Couting ... »

...

- [Fotland 93] « Knowledge representation in the Many faces of Go »
- **[Allis 94] « Searching for solutions in games and artificial intelligence » (thèse)**
- [Wolf 94] « The program GoTools and hits computer generated tsumego database »
- **[Müller 95] « Computer Go as a sum of local games » (thèse)**
- [Berlekamp & Wolfe 94] Mathematical Go Endgames – Nightmare for the Professional Go Player »
- [Wolf 96] « About problems in generalizing a tsumego program to open positions »
- [Klinger and Mechner 96] « An architecture for computer go »

...



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Joël SAUCIN

- **Les années 1990 :**

- 1990 : Séminaire « Go et Info » à l'ENS Ulm
- [Victorri 92] « Elements d'une théorie géométrique du jeu de go »
- [Moneret 1996] « Mise à jour incrémentale des concepts du jeu de go » (DEA)

**Le jeu de go,
modèle analogique pour
les sciences humaines**

(première édition : 1991)

- **Thèses de doctorat :**

- 1992 : Pierre Pompidor « Apprentissage symbolique par exemples et contre-exemples géométrisables en prise de décisions : le système FONGU S : application au jeu de Go »
- 1995 : Bruno Bouzy « Modélisation cognitive du joueur de go »
- 1995 : Patrick Ricaud « Une approche pragmatique de l'abstraction appliquée à la modélisation la stratégie élémentaire du jeu de go »
- 1996 : Tristan Cazenave « Systeme d'Apprentissage par Auto-Observation. Application au Jeu de Go. »



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- Les années 1990 :
 - Echelle de Go entre ordinateurs :
 - Monte-Carlo Go :

Program	IGS name	Scoring	Author	E-mail address (replace ':' with '@')
Ego	ego	Japanese	Bruce Wilcox	suewilcox:bigfoot.com
Explorer	ex63	Chinese	Martin Mueller	mmueller:cs.ualberta.ca
Gnu Go	FSF	Japanese	FSF	gnugo:gnu.org
GoAhead	GoAhead	Japanese	Peter Voitke	voitke:physik.tu-berlin.de
Gobble	bernd	Chinese	Bernd Bruegmann	bruegman:gravity.psu.edu
Godot	LuckyGodot	Chinese	Jens Lieberum	jenslieberum:yahoo.de
GoLife I	GoLifeI	Chinese	Henrik Rydberg	rydberg:fy.chalmers.se
Gogo	pwgoldberg	Chinese	Paul Goldberg	P.W.Goldberg:liverpool.ac.uk
Golois	Golois	Chinese	Tristan Cazenave	cazenave:ai.univ-paris8.fr
gottaGo	gottaGo	Japanese	Eric Pettersen	pett:cgl.ucsf.edu
GoWind	gowind	Chinese	Ruhai Zhou	rzhou:odu.edu
Indigo	parigo	Chinese	Bruno Bouzy	bouzy:math-info.univ-paris5.fr
Jacqueline Go	N/A	Chinese	Patrick Hippenmeyer	info:informatrix.ch
JaGo	Dude	Japanese	Fuming Wang	fuming:venus.radsci.uci.edu
Many Faces of Go	ManyFaces	Chinese	David Fotland	fotland:smart-games.com
NeuroGo II	NeuroGoII	Chinese	Markus Enzenberger	emarkus:cs.ualberta.ca
Orego	Orego	Chinese	Orego project	drake:lclark.edu
Poka	Poka	Chinese	Howard Landman	howard:riverrock.org
SmartGo	SmartGo	Chinese	Anders Kierulf	anders:smartgo.com
Topgoer	topgoer	Chinese	Shaomin Feng	smfeng:yeah.net
The Turtle	TheTurtle	Chinese	Joan Pons Semelis	semelis:terra.es

SHM - 18/12/2015 - Mathématiques et jeux : histoires croisées - Tristan Cazenave

Monte Carlo Go

- 1993 : first Monte Carlo Go program
 - Gobble, Bernd Bruegmann.
 - How nature would play Go ?
 - Simulated annealing on two lists of moves.
 - Statistics on moves.
 - Only one rule : do not fill eyes.
 - Result = average program for 9x9 Go.
 - Advantage : much more simple than alternative approaches.

ihp Institut Henri Poincaré

2:08 / 41:23



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- Les années 2000 :

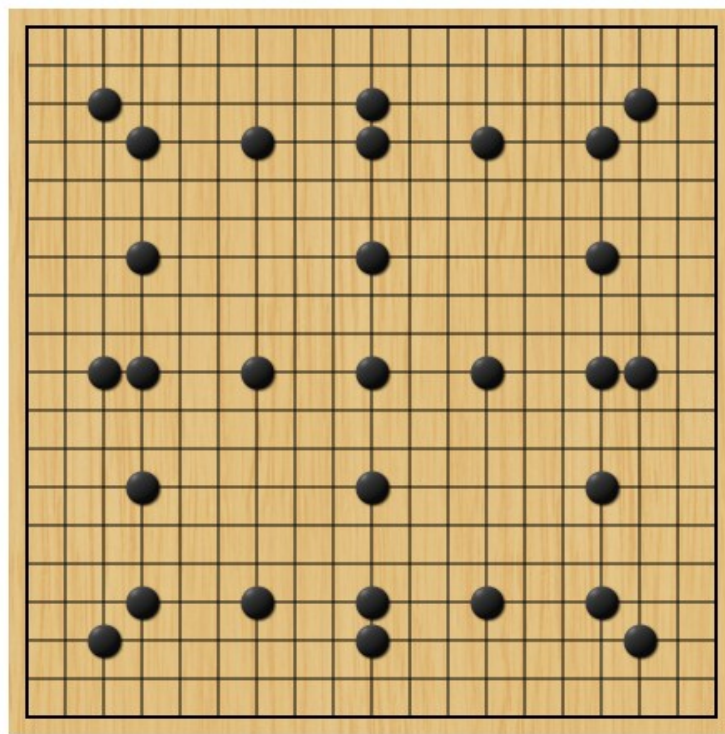




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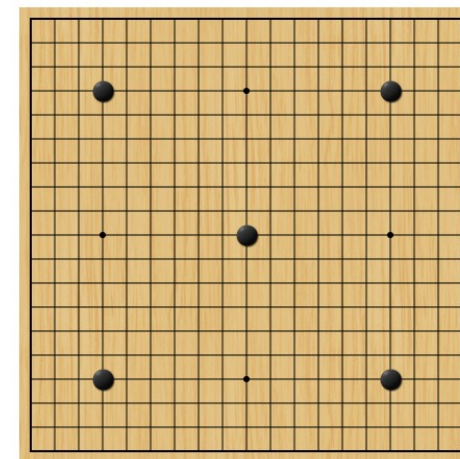
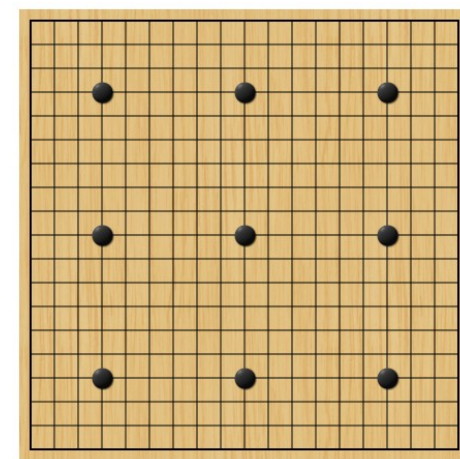
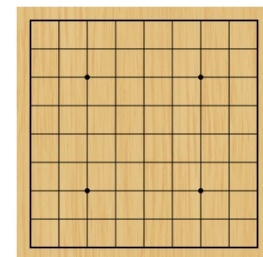
- Défaites de la machine :
 - 1997 : Janice Jim (1p) gagne à 25 pierres contre HandTalk
 - 1998 : Martin Müller (6d) gagne à 29 pierres contre *MFoG*





Les logiciels

- Victoires de la machine :
 - 2007 : MoGo - 1/3 blitz sur 9x9 contre Guo Juan (5p)
 - 2008 : MoGo - 1/3 parties sur 9x9 contre Catalin Taranu (5p)
 - 2008 : Mogo – 9 pierres sur 19x19 contre Kim MyungWan (8p)
 - 2012 : Zen – 5 et 4 pierres sur 19x19 contre Takemiya Mazaki (9p)

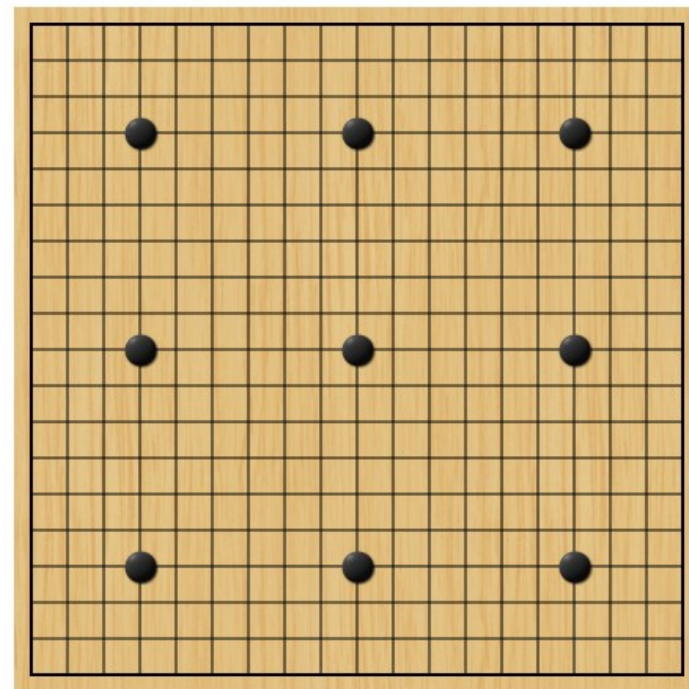
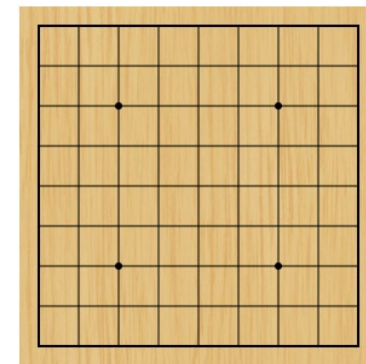




Les logiciels



- Victoires de la machine :
 - 2012 :
contre Guo Juan (5p)
 - 2008 : MoGo sur 19x19 avec 9 pierres
contre Catalin Taranu (5p)





Les logiciels



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Technology

Facebook trains AI to beat humans at Go board game

By Leo Kelion
Technology desk editor

27 January 2016 | Technology

L'apprentissage profond : une révolution en intelligence artificielle



Yann LeCun

04 février 2016 ~ 18:00 ~ 19:00 ~ Leçon inaugurale
Amphithéâtre Marguerite de Navarre - Marcelin Berthelot



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Dossier de presse

Support





Lee Sedol (9p)



Lee SeDol

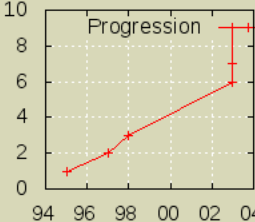

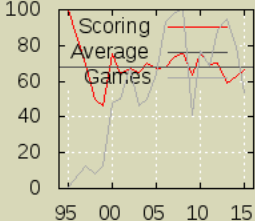
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Major titles

- Winner of 2002 [Fujitsu Cup](#) (d. [Yu Ch'ang-hyeok](#))
- Winner of 2002 [LG Refined Oils Cup](#) (d. [Choe Myeong-hun](#) 3-1)
- Winner of 2003 [LG Cup](#) (d. [Lee Changho](#) 3-1)
- Winner of 2003 [Fujitsu Cup](#) [Fujitsu Cup](#)
- Winner of 2004 [Samsung Cup](#) (d. [Wang Xi](#) 2-0)
- Winner of 2005 [Toyota Denso Cup](#) (d. [Chang Hao](#) 2-1)
- Winner of 2005 [Fujitsu Cup](#) (d. [Choi Cheolhan](#))
- Winner of 2006 [GS Caltex Cup](#) (d. [Choi Cheolhan](#) 3-0)
- Winner of 2006 [Korean Prices Information Cup](#) (d. [Choi Wonyong](#) by 2-0)
- Winner of 2007 [Toyota Denso Cup](#) (d. [Cho U](#) by 2-1)
- Winner of 2007 [Korean Prices Information Cup](#) (d. [Lee Yeongkyu](#) 2-1)
- Winner of 2007 [Kuksu](#) (d. [Yun Junsang](#) 3-0)
- Winner of 2007 [Myeongin](#) (d. [Cho Hanseung](#) 3-0)
- Winner of 2008 [Samsung Cup](#) (d. [Park Yeonghun](#) 2-1)
- Winner of 2008 [LG Cup](#) (d. [Han Sanghoon](#) 2-1)
- Winner of 2008 [Myeongin](#) (d. [Kang Dongyun](#) 3-1)
- Winner of 2009 [Samsung Cup](#) (d. [Kong Jie](#) 2-0)
- Winner of 2009 [Kuksu](#) (d. [Mok Jinseok](#) 3-1)
- Winner of 2010 [BCcard Cup World Baduk Championship](#) (d. [Chang Hao](#) 3-0)
- Winner of 2010 [Korean Prices Information Cup](#) (d. [Lee Changho](#) 2-0)
- Winner of 2011 [Siptan](#) (d. [Kang Yootaek](#) 2-1)
- Winner of 2011 [BCcard Cup World Baduk Championship](#) (d. [Gu Li](#) 3-2)
- Winner of 2011 [Chunlan Cup](#) (d. [Xie He](#) 2-1)
- Winner of 2012 [GS Caltex Cup](#) (d. [Park Yeonghun](#) 3-2)
- Winner of 2012 [Samsung Cup](#) (d. [Gu Li](#) 2-1))
- Winner of 2012 [Myeongin](#) (d. [Baek Hongsuk](#) 3-2)

Other Titles

- Winner of 2000 [Chunwon](#) (d. [Yoo Jaehyeong](#) 3-0)
- Winner of 2000 [Baedalwang?](#) (d. [Yoo Changhyuk](#) 3-2)
- Winner of 2001 [Osram Cup](#) (d. [Park Yeonghun](#) 2-0)
- Winner of 2002 [BC Card Cup](#) (d. [Kim Myeongwan](#) 2-1)
- Winner of 2002 [KTF Cup](#) (d. [Yoo Changhyuk](#) 2-1)
- Winner of 2002 [SK Gas Cup](#) (d. [Baek Daehyun](#) 2-0)
- Winner of 2005 [Maxim Cup](#) (d. [Yang Jaeho](#) 2-1)
- Winner of 2006 [Maxim Cup](#) (d. [Choi Cheolhan](#) 2-1)
- Winner of 2006 [KBS Cup](#) (d. [Choi Cheolhan](#) 2-0)
- Winner of 2007 [Maxim Cup](#) (d. [Park Jungsang](#) 2-1)
- Winner of 2007 [Asian TV Cup](#) (d. [Chen Yaoye](#) 1-0)
- Winner of 2008 [Asian TV Cup](#) (d. [Cho Hanseung](#) 1-0)
- Co-Winner of 2010 [Korean Baduk League](#) w/ [Team Shinan Chunil Salt](#)
- Winner of 2010 [Olleh KT Cup](#) (d. [Kang Dongyun](#) 3-1)
- Winner of 2011 [Olleh KT Cup](#) (d. [Lee Changho](#) 3-1)
- Winner of 2012 [Olleh KT Cup](#) (d. [Choi Cheolhan](#) 3-1)
- Winner of 2014 [KBS Cup](#) (d. [Park Junghwan](#) 2-1)

General Information			
also found as	이세돌 Yi Se-tol Lee Sedol		
korean	Yi Se-tol		
nationality	 Korea (South)		
born	1983-03-02		
teachers	Kwan Kab-Ryong		
rank	9		
pro status	Professional		
affiliation	Korean Go Association, Seoul, Korea		
pid	7119		
Performance			
games		1157	
wins		789	
losses		366	
draws		2	
unknown		0	
no result		0	
score	68.28% (details)		
biography	Lee Sedol, nickname: 'Boy, the Unbeatable' is generally considered as the 'next Lee Changho'.		

Rank Promotion

- 1-dan: 1995
- 2-dan: 1998
- 3-dan: 1999
- 6-dan: 2003, March - For winning the 7th [LG Cup](#)
- 7-dan: 2003, May - For runner up in the [KT Masters Cup](#)
- 9-dan: 2003, July - For winning the 16th [Fujitsu Cup](#)



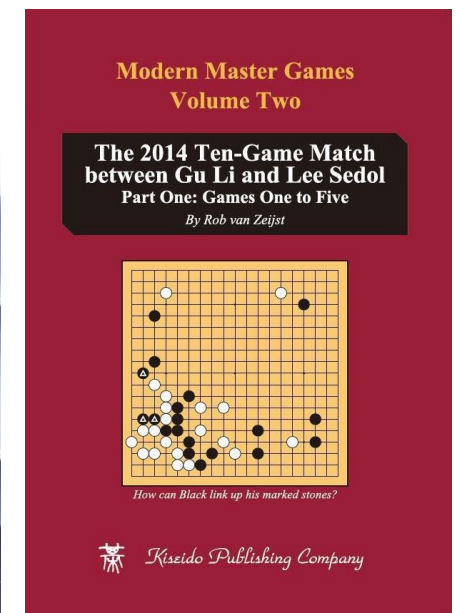
Pourquoi le match AlphaGO / Lee Sedol est-il un événement (historique) ?

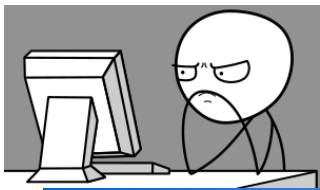
07/03/2016





Lee Sedol (9p)





... et si la machine gagne?



China.org.cn

Monday, Mar 7, 2016 Beijing, Sunny, 37 °F [Weather](#)

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Ke Jie: Lee Se Dol will defeat AlphaGo 5:0

Xinhua, February 22, 2016

0 Comment(s) Print E-mail

Adjust font size:

The rules of "AlphaGo - Lee Se Dol Go Match" has been announced on Feb. 22 and [Ke Jie, the No.1 Go Chess player in China](#), indicated that Lee would clean sweep the computer by 5-0.

Can AlphaGo defeat Lee Sedol?

[GUEST WRITER](#) : [58 COMMENTS](#)



The Go world was shocked and intrigued in January, when news broke of DeepMind AlphaGo's victory over top European pro Fan Hui 2p. Attention now turns towards next week's showdown against Lee Sedol, which begins on March 9...



[GO NEWS](#) - MARCH 4, 2016

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A LA UNE

BIBLIOTHEQUE MEDICIS
Intelligence artificielle
 Diffusée le 04/03/2016
 Durée : 59 minutes

Le plus bel endroit pour accueillir le rendez-vous de référence des livres et des auteurs.

[> En savoir plus](#)

Intelligence artificielle - Bibliothèque Médicis (04/03/2016)

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Par ailleurs ...



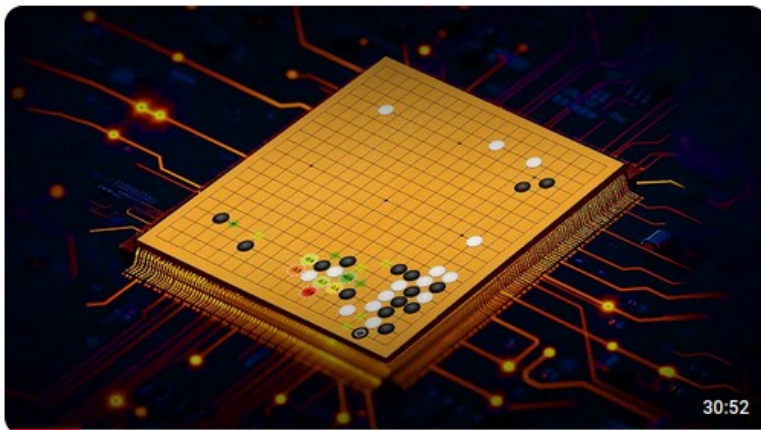
IA et Jeu de Go ? : Tristan Cazenave / Clément Béni - 18 janvier 2018

645 vues • il y a 7 ans



IA et Jeu de Go : Tristan Cazenave / Clément Béni [Autour d'un Verre ADELI] 2018/01/18 AG.

<https://www.youtube.com/watch?v=HmT6XBAlcZo>



Maîtriser l'IA pour progresser au Go | Tuto Katrain | Jeu de Go

1,5 k vues • il y a 10 mois



MDZ - Jeu de Go

La vidéo pour tout savoir sur l'Intelligence Artificielle appelée Katago. Vous allez apprendre comment installer le client Katrain, ...

<https://www.youtube.com/watch?v=-0p2mAspO8s>

Par ailleurs ...

Niveau

Échelle principale : 7k
Échelle hybride : 7k



À partir du 1er mai 2022, l'échelle principale ne prend en compte que les tournois joués en présentiel. L'échelle hybride prend en compte tous les tournois, joués en présentiel ou en ligne.

Fédération Française de Go
B.P. 95 - 75262 PARIS Cedex 06
<http://ffg.fedego.org>

Association loi 1901 n° WTS105043
Agrément jeunesse et éducation populaire n° 91-594
Siret n° 42484204 0002



ANNEXE 6 : Rapport du Comité antitriche sur l'analyse des parties de 3 joueurs

Rapport du comité antitriche, 04/12/22

L'analyse sur les deux premiers joueurs est globalement liée, ils seront donc présentés de manière jointe.

Niveau FFG : 2k (après réévaluation de 5k quelques mois avant)

Analyse des parties :

Taux de correspondance élevé avec des coups d'IA, mais en particulier très peu d'erreurs significatives jouées dans les parties :



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← → ↺ <https://www.globaltimes.cn/page/202502/1329171.shtml> 📄 🔍 ⭐ 📌 👤

GT Global Times

CHINA / SOCIETY

Chinese Go player Qin Siyue banned for 8 years for AI cheating in competition

By Global Times

Published: Feb 27, 2025 11:39 AM



Fair-Play in Online Go

SEYGO Tour events held on the Online Go Server will have a clear "anti-cheating" policy.

