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Thinking <sup>[5]</sup>

### **SmarThink,**

an [UCI](#) and [WinBoard](#) compatible chess engine by [Sergei S. Markoff](#) written in plain [C](#), previously distributed by [Lokasoft](#).

SmarThink contains a lot of [knowledge](#) to guide the [search](#), and has an aggressive attacking style. It applies [PVS](#) with an [aspiration](#) <sup>[1]</sup>, and uses original techniques in search and [evaluation](#) based on complex analysis including the use of ideas of [Mikhail Botvinnik](#) <sup>[2]</sup>, such as [trajectory](#) analysis <sup>[3]</sup>, and the related *same threat extension* <sup>[4]</sup>, later dubbed [Botvinnik-Markoff Extension](#).

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## Recent Versions

### SmarThink v1.97

SmarThink v1.97, released in December 2016, applies [magic bitboards](#), uses more aggressive [SEE](#) in [move ordering](#) even for [non-captures](#), adaptive [aspiration windows](#) based on [depth](#) and [score](#), a new [transposition table](#) entry priority scheme based on [best move](#) index, and comes with improved [reductions](#), optimizations and further [evaluation tuning](#) <sup>[6]</sup>.

### SmarThink v1.98

SmarThink v1.98 was released in January 2018 after massive [tuning](#) of [evaluation](#) and [search](#), a further improved [king attack](#) evaluation, and several optimizations <sup>[7]</sup>.

## Tournament Play

SmarThink played various tournaments in Russia, and became Russian computer chess champion in 2004, [CIS](#) computer chess champion at the [CCCCISC 2005](#) <sup>[8]</sup>, and third at the [CCCCISC 2008](#) behind [WildCat](#) and [Strelka](#).

## Photos & Games



[CCCCISC 2008](#), [Jury Osipov](#) and [Sergei Markoff](#), [SmarThink](#) - [Strelka](#) <sup>[9]</sup>

```
[Event "CCCCISC 2008"]
[Site "Moscow SDCHES RGSU"]
[Date "2008.02.29"]
[Round "1"]
[White "SmarThink 1.1 r1119"]
[Black "Strelka 2.0B"]
[Result "1/2-1/2"]
```

```
1. c4 Nf6 2. Nc3 e5 3. Nf3 Nc6 4. e3 Bb4 5. Qc2 Bxc3 6. Qxc3 Qe7 7. a3
d5 8. d4
exd4 9. Nxd4 Nxd4 10. Qxd4 dxc4 11. Qxc4 O-
O 12. f3 Be6 13. Qc2 Rad8 14. Bd2
Bd5 15. Bb5 Rd6 16. Be2 b6 17. O-
O Rfd8 18. Bc1 Re6 19. Re1 h6 20. Bb5 Re5 21.
Bf1 Be6 22. b4 Rh5 23. e4 c5 24. g4 Bxg4 25. fxg4 Nxg4 26. Bf4 Qf6 27.
Bg3 Qg5
28. Qg2 Rd2 29. Re2 Rd4 30. Qf3 c4 31. Qf4 Ne5 32. Qxg5 Rxd5 33. Bg2 f
6 34. Rc2
Kf8 35. a4 h5 36. Bxe5 Rxe5 37. Rac1 c3 38. Rb1 Rg5 39. Kf1 a5 40. bxa5
5 bxa5
41. Rxc3 Rxa4 42. Rb7 Kg8 43. Bf3 Ra1+ 44. Kf2 Ra2+ 45. Be2 Kh7 46. Rc
6 Rg4 47.
Ke3 Ra3+ 48. Bd3 Rh4 49. Kd4 Kh6 50. Rc2 Rg4 51. Rc8 g6 52. Rb6 f5 53.
h3 Rg3
54. Bc2 fxe4 55. Bxe4 Rab3 56. Re6 Rg1 57. h4 Rg4 58. Rcc6 Rbg3 59. Ra
6 a4 60.
Kd5 Kg7 61. Re7+ Kh6 62. Ra8 Rxh4 63. Rh8+ Kg5 64. Bxg6 a3 65. Re5+ Kg
4 66.
Re4+ Kg5 67. Re2 Ra4 68. Bb1 Ra5+ 69. Kc6 Kg4 70. Kb6 Rg5 71. Re4+ Kh3
72. Ba2
Rf3 73. Rh6 Kg3 74. Be6 Rd3 75. Ra4 1/2-1/2
```

## See also

- [Clever & Smart](#)
- [Thought](#)

## Forum Posts

### 2002 ...

- [PASSED PAWN PUSH extension scheme \(and SmarThink\)](#) by [Sergei S. Markoff](#), [CCC](#), September 18, 2002
- [SmarThink 0.12a+ is available for downloading \(+singular extensions\)](#) by [Sergei S. Markoff](#), [CCC](#), October 16, 2002
- [SmarThink 0.15b](#) by [Sergei S. Markoff](#), [CCC](#), January 25, 2003
- [SmarThink 0.16b is released](#) by [Sergei S. Markoff](#), [CCC](#), March 04, 2003
- [Some explanations about SmarThink](#) by [Sergei S. Markoff](#), [CCC](#), June 05, 2003
- [SmarThink 0.17 prerelease!](#) by [Sergei S. Markoff](#), [CCC](#), October 01, 2003
- [The "same threat extension" as effective way to resolve horizon problem](#) by [Sergei Markoff](#), [CCC](#), October 01, 2003
- [Forward pruning and some related techniques](#) by [Sergei Markoff](#), [CCC](#), March 02, 2004

### 2005 ...

- [SmarThink](#) by [Sergei S. Markoff](#), [CCC](#), July 04, 2005
- [Smarthink](#) by [André van Ark](#), [CCC](#), May 10, 2007

### 2010 ...

- [Smarthink 1.20](#) by Tom Giampietro, [CCC](#), September 12, 2011
- [SmarThink 1.40 updated](#) by [Sergei S. Markoff](#), [CCC](#), November 11, 2013
- [SmarThink 1.50 released](#) by [Sergei S. Markoff](#), [CCC](#), January 01, 2014
- [Pruning in PV nodes](#) by [Sergei S. Markoff](#), [CCC](#), January 14, 2014 » [Reductions](#), [Root](#), [Node Types](#)
- [SmarThink 1.60 released](#) by [Sergei S. Markoff](#), [CCC](#), June 23, 2014
- [SmarThink 1.70 released](#) by [Sergei S. Markoff](#), [CCC](#), July 21, 2014

### 2015 ...

- [SmarThink v1.80 is available](#) by [Sergei S. Markoff](#), [CCC](#), January 02, 2016
- [Re: txt: automated chess engine tuning](#) by [Sergei S. Markoff](#), [CCC](#), February 15, 2016 » [Automated Tuning](#)
- [SmarThink v1.90 is available](#) by [Sergei S. Markoff](#), [CCC](#), March 28, 2016
- [SmarThink v1.95 is available](#) by [Sergei S. Markoff](#), [CCC](#), May 23, 2016
- [SmarThink v1.96 is available](#) by [Sergei S. Markoff](#), [CCC](#), June 29, 2016

- [SmarThink v1.97 is available](#) by [Sergei S. Markoff](#), [CCC](#), December 22, 2016
- [New SmarThink website](#) by [Sergei S. Markoff](#), [CCC](#), April 27, 2017
- [SmarThink 1.98 is out](#) by [Sergei S. Markoff](#), [CCC](#), January 31, 2018

## External Links

### Chess Engine

- [SmarThink site](#) (Russian)
- [SmarThink site](#) (English)
- [SmarThink from Wikipedia](#)
- [SmarThink by Sergei Markoff, Russia - sdchesss.ru](#)
- [SmarThink](#) in [CCRL 40/4](#)

### Misc

- [Thought from Wikipedia](#)
- [Smart \(disambiguation\) from Wikipedia](#)
- Trio Posthumus Krijger Vermeer - Smart Thinkin', [De Toonzaal](#), [Den Bosch](#) 2013, [YouTube](#) Video  
[Joris Posthumus](#), [Arno Krijger](#) and [Pascal Vermeer](#)

## References

1. ^ [A way to improve PVS](#) by [Sergei Markoff](#), [CCC](#), September 07, 2009
2. ^ [Подробнее о SmarThink](#)
3. ^ [Forward pruning and some related techniques](#) by [Sergei Markoff](#), [CCC](#), March 02, 2004
4. ^ [The "same threat extension" as effective way to resolve horizon problem](#) by [Sergei Markoff](#), [CCC](#), October 01, 2003
5. ^ [José Ferraz de Almeida Júnior](#), Girl with a Book, [São Paulo Museum of Art](#), [Wikimedia Commons](#), [Thought from Wikipedia](#)
6. ^ [SmarThink v1.97 is available](#) by [Sergei S. Markoff](#), [CCC](#), December 22, 2016
7. ^ [SmarThink 1.98 is out](#) by [Sergei S. Markoff](#), [CCC](#), January 31, 2018
8. ^ [SmarThink from Wikipedia](#)
9. ^ [Новости за февраль - март 2008 года, 29 февраля 2008 г.](#) from [sdchess.ru](#)

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<a href="#">Sergei Markoff</a>	Mar 12, 2018
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<a href="#">Walter Faxon</a>	Mar 6, 2015

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