# THE 18<sup>TH</sup> CSA WORLD COMPUTER SHOGI CHAMPIONSHIP

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## 1. Introduction

In the run up to this year's Computer Shogi World Championship, there had been two important developments that promise to have a significant impact on the progress of computer shogi. First, a server similar to the Computer Go Server had been made available by the Tokyo University group of Kaneko (leader of the GPS Shogi team). Here it is now possible to test one's program against other programs 24 hours a day. The second development was the release of the program Shogidokoro, which is an Arena like interface for shogi programs. Like Arena, shogi engines can be plugged into Shogidokoro, so it is no longer necessary to spent time on making a user interface. Shogidokoro also takes care of the connection with the server handling the games during the CSA tournament and can act as an interface to Kaneko's shogi server. Shogidokoro should make it much easier to start building a shogi program and also easier to test it. Neither development had an impact yet on the number of participants this year, which at 40 was the same as last year. However, more than 20 different programs had been playing on the shogi server and many programs in the first preliminary stage were running under Shogidokoro.

The favourite to win the World Computer Shogi Championship this year was probably Tanase Shogi. It missed the title by a whisker last year, and the impression was that the program had improved significantly since then. The other usual suspects would be Gekisashi (World Champion in 2005), Bonanza (World Champion in 2006) and of course reigning World Champion YSS. However, rumour had it that YSS programmer Yamashita had been neglecting YSS a little in favour of his Go program Aya and that he didn't expect to do well this year.

A lot of drama was expected this year, but this year's tournament exceeded all expectations and turned out to be the most historic CSA tournament ever...

## 2. The First Preliminary Stage

In the first preliminary stage, one program clearly stood out. This was the program Shuso, a first year entry that won all of its games. The level of the programs on the first day differs a lot, but there are some strong veteran competitors like My Move, Usapyon and Misaki, so winning all games is not so easy. Shuso was one of the programs running under ShogiDokoro.

The program My Move finished second and another first-year entry called dos finished third. Fourth place was for the veteran program Usapyon and fifth place was for the program A-class Move#1. This program is definitely different from any other program because it is running on an FPGA. It has been common practice for shogi programs to run on off-the-shelf hardware and only a few programmers have made the effort to design special hardware for shogi. Using FPGAs could give us a new generation of shogi computers and be a great help in reaching the ultimate goal of beating the best professional players.

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The other programs that qualified from the first day were Yamada Shogi, Misaki, Mattari Yuchan, and Auau Shogi. Not many surprises here, because all of these programs have played in the second preliminary stage before.

| No. | Name Program | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Pt | SOS | SB | MD |
|-----|--------------|---|---|---|---|---|---|---|----|----|----|----|
| *1 | Shuso | 8+ | 20+ | 3+ | 17+ | 4+ | 2+ | 6+ | 7.0 | 28.0 | 28.0 | 21.0 |
| *2 | My Move | 16+ | 21+ | 5+ | 10+ | 6+ | 1- | 3+ | 6.0 | 30.0 | 23.0 | 17.0 |
| *3 | dos | 7+ | 13+ | 1- | 20+ | 12+ | 9+ | 2- | 5.0 | 28.0 | 15.0 | 10.0 |
| *4 | Usapyon | 22+ | 16+ | 12- | 5+ | 1- | 8+ | 7+ | 5.0 | 27.0 | 17.0 | 11.0 |
| *5 | A-class Move#1 | 9+ | 15+ | 2- | 4- | 18+ | 12+ | 10+ | 5.0 | 27.0 | 16.0 | 10.0 |
| *6 | Yamada Shogi | 19+ | 14+ | 18+ | 12+ | 2- | 7+ | 1- | 5.0 | 27.0 | 14.0 | 8.0 |
| *7 | Misaki | 3- | 11+ | 13+ | 8+ | 10+ | 6- | 4- | 4.0 | 30.0 | 15.0 | 8.0 |
| *8 | Mattari Yuchan | 1- | 18+ | 11+ | 7- | 17+ | 4- | 14+ | 4.0 | 27.0 | 11.0 | 5.0 |
| *9 | Auau Shogi | 5- | 10- | 16+ | 15+ | 14+ | 3- | 13+ | 4.0 | 26.0 | 12.0 | 6.0 |
| 10 | Narikin Shogi | 15+ | 9+ | 17+ | 2- | 7- | 18+ | 5- | 4.0 | 26.0 | 11.0 | 5.0 |
| 11 | Oki | 13- | 7- | 8- | 19+ | 20+ | 17+ | 12+ | 4.0 | 19.0 | 8.0 | 4.0 |
| 12 | HIT Shogi | 14+ | 19+ | 4+ | 6- | 3- | 5- | 11- | 3.0 | 29.0 | 10.0 | 3.0 |
| 13 | Yumeki | 11+ | 3- | 7- | 14- | 21+ | 15+ | 9- | 3.0 | 24.0 | 8.0 | 3.0 |
| 14 | Garyu | 12- | 6- | 22+ | 13+ | 9- | 19+ | 8- | 3.0 | 22.0 | 6.0 | 2.0 |
| 15 | Sexy AI-chan | 10- | 5- | 21+ | 9- | 16+ | 13- | 17+ | 3.0 | 22.0 | 6.0 | 2.0 |
| 16 | Ym Shogi | 2- | 4- | 9- | 21+ | 15- | 20+ | 18+ | 3.0 | 22.0 | 4.0 | 1.0 |
| 17 | Hayabusa | 21+ | 22+ | 10- | 1- | 8- | 11- | 15- | 2.0 | 24.0 | 2.0 | 0.0 |
| 18 | Hakusa Shogi | 20+ | 8- | 6- | 22+ | 5- | 10- | 16- | 2.0 | 23.0 | 2.0 | 0.0 |
| 19 | ShallowThoughts | 6- | 12- | 20- | 11- | 22+ | 14- | 21+ | 2.0 | 18.0 | 2.0 | 0.0 |
| 20 | Bald Rat | 18- | 1- | 19+ | 3- | 11- | 16- | 22- | 1.0 | 24.0 | 2.0 | 0.0 |
| 21 | Nanoha | 17- | 2- | 15- | 16- | 13- | 22+ | 19- | 1.0 | 20.0 | 1.0 | 0.0 |
| 22 | Tohu | 4- | 17- | 14- | 18- | 19- | 21- | 20+ | 1.0 | 16.0 | 1.0 | 0.0 |

**Table. 1:** Results of the First Qualification Round
* Shuso, My Move, dos, Usapyon, A-class Move#1, Yamada Shogi, Misaki, Mattari Yuchan and Auau Shogi qualify for the second qualification round.


### 3. The Second Preliminary Stage

With 24 programs competing for only 5 spots in the final, there was a lot of action and drama on the second day. Of the 24 programs, there were no less than 9 programs that had experience in the finals, so this was a tight race. In the end, former World Champion Bonanza was way above the rest, easily qualifying for the finals with 8 wins out of 9 games. Second place was for Kakinoki Shogi, which missed the final last year after dropping four consecutive games following a 5-0 start. This year it was not to be denied, winning 7 games and qualifying comfortably. Bingo Shogi finished third, which was no surprise, because Bingo had been impressive on Kaneko's shogi server in the weeks before the tournament. Otsuki Shogi qualified in fourth place, the win against Bonanza being a major factor.

The last program to claim a place in the final was a surprise: Nara Shogi. It kind of sneaked in through the back door, not playing Bonanza, which would probably have been a loss. However, wins against Otsuki Shogi and Kakinoki Shogi indicated that it had been improved significantly since last year and deserved to make its debut on the final day. Still, the programmer of Shuso will not have been too happy

about the outcome of the final game. After 13 moves, Shuso failed to send the next move to the server and it lost on time. Of course, it is unclear if Shuso would have beaten Nara Shogi, but losing without playing a proper game is very unsatisfactory.

| No. | Program Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Pt | SOS | SB | MD |
|-----|--------------|---|---|---|---|---|---|---|---|---|----|-----|----|----|
| *1 | Bonanza | 21+ | 19+ | 17+ | 7+ | 2+ | 3+ | 9+ | 4- | 8+ | 8.0 | 44.5 | 38.5 | 29.5 |
| *2 | Kakinoki Shogi | 18+ | 9+ | 6+ | 3+ | 1- | 10+ | 5- | 13+ | 4+ | 7.0 | 50.5 | 36.5 | 25.5 |
| *3 | Bingo Shogi | 22+ | 5+ | 15+ | 2- | 4+ | 1- | 7+ | 10+ | 9+ | 7.0 | 48.0 | 33.0 | 25.0 |
| *4 | Otsuki Shogi | 14+ | 8+ | 5- | 6+ | 3- | 11+ | 10+ | 1+ | 2- | 6.0 | 52.5 | 32.5 | 20.5 |
| *5 | Nara Shogi | 16+ | 3- | 4+ | 11- | 13+ | 12+ | 2+ | 8- | 7+ | 6.0 | 48.0 | 31.0 | 20.0 |
| 6 | Kiri | 19+ | 21+ | 2- | 4- | 14- | 18+ | 8= | 15+ | 16+ | 5.5 | 39.5 | 17.5 | 11.5 |
| 7 | Shuso | 12+ | 23+ | 10+ | 1- | 8- | 14+ | 3- | 11+ | 5- | 5.0 | 47.0 | 21.0 | 14.0 |
| 8 | Dragon's Egg | 15= | 4- | 22+ | 12+ | 7+ | 9- | 6= | 5+ | 1- | 5.0 | 46.5 | 18.0 | 10.0 |
| 9 | GPS Shogi | 24+ | 2- | 11- | 20+ | 17+ | 8+ | 1- | 12+ | 3- | 5.0 | 46.0 | 19.0 | 12.0 |
| 10 | TACOS | 13+ | 17+ | 7- | 14+ | 11+ | 2- | 4- | 3- | 19+ | 5.0 | 45.5 | 20.5 | 12.0 |
| 11 | K-Shogi | 23+ | 12- | 9+ | 5+ | 10- | 4- | 15+ | 7- | 13+ | 5.0 | 42.0 | 21.0 | 13.0 |
| 12 | SPEAR | 7- | 11+ | 13+ | 8- | 16+ | 5- | 17+ | 9- | 14+ | 5.0 | 42.0 | 21.0 | 12.0 |
| 13 | Misaki | 10- | 20+ | 12- | 18+ | 5- | 16+ | 14+ | 2- | 11- | 4.0 | 43.0 | 15.0 | 8.0 |
| 14 | My Move | 4- | 15+ | 16+ | 10- | 6+ | 7- | 13- | 18+ | 12- | 4.0 | 42.5 | 17.5 | 8.0 |
| 15 | A-Class Move#1 | 8= | 14- | 3- | 22= | 24+ | 20+ | 11- | 6- | 23+ | 4.0 | 35.5 | 7.0 | 2.0 |
| 16 | Kinoa Shogi | 5- | 22+ | 14- | 19+ | 12- | 13- | 24+ | 20+ | 6- | 4.0 | 35.0 | 10.5 | 5.0 |
| 17 | Shotest | 20+ | 10- | 1- | 24+ | 9- | 23+ | 12- | 21- | 22+ | 4.0 | 34.0 | 9.0 | 4.0 |
| 18 | Usapyon | 2- | 24+ | 19- | 13- | 23+ | 6- | 20+ | 14- | 21+ | 4.0 | 33.0 | 9.0 | 4.0 |
| 19 | Ayamari Shogi | 6- | 1- | 18+ | 16- | 20- | 22= | 21+ | 23+ | 10- | 3.5 | 35.5 | 8.0 | 2.0 |
| 20 | WILDCAT | 17- | 13- | 21+ | 9- | 19+ | 15- | 18- | 16- | 24+ | 3.0 | 32.5 | 7.5 | 2.0 |
| 21 | Auau Shogi | 1- | 6- | 20- | 23- | 22+ | 24- | 19- | 17+ | 18- | 2.0 | 34.0 | 6.0 | 0.0 |
| 22 | Mattari Yuchan | 3- | 16- | 8- | 15= | 21- | 19= | 23- | 24+ | 17- | 2.0 | 33.5 | 2.0 | 0.0 |
| 23 | Yamada Shogi | 11- | 7- | 24- | 21+ | 18- | 17- | 22+ | 19- | 15- | 2.0 | 31.5 | 4.0 | 0.0 |
| 24 | dos | 9- | 18- | 23+ | 17- | 15- | 21+ | 16- | 22- | 20- | 2.0 | 30.0 | 4.0 | 0.0 |

**Table. 2:** Results of the Second Qualification Round.

* Bonanza, Kakinoki Shogi, Bingo Shogi, Otsuki Shogi and Nara Shogi qualify for the finals.

### 4.    The Finals

For a number of years now, there has been a large gap in the finals between the top programs (YSS, Tanase Shogi, Gekisashi and Bonanza) and the other programs, who more or less take turns in qualifying for the final day. One of the questions before the tournament was if a program like Bingo Shogi or Otsuki Shogi had a shot at closing the gap. Otsuki Shogi had played impressively at the tournament during the Game Programming Workshop in November 2007 and Bingo Shogi was rated about as high as YSS on the shogi server.

The first round already had a surprise: Bonanza lost against Bingo Shogi. Bonanza's attacking style backfired because it ran out of pieces, unable to place the final blow. Bingo Shogi made no mistake and Bonanza graciously resigned in a position it had no hope of winning, but that still was far from mate. All the other games went according to seeding.

The second and third round were uneventful, as all of the higher ranked programs won their games. The first game that was interesting was played in the 4th round between Tanase Shogi and Bonanza. Bonanza

seemed to have an advantage, but Tanase Shogi defended very well against the Bonanza attack and won the game in only 84 moves.

The fifth round had the first test for unbeaten champion YSS, playing Gekisashi. This was a strange game, as YSS had an early advantage, but then it seemed to lose its way. Unable to find a safe area for its king, it moved it to an even more vulnerable position than it was already in and then it sacrificed some pawns for a phantom attack. Gekisashi took full advantage, launching a strong attack and winning easily after that. Meanwhile, Bonanza suffered a second unexpected loss against Otsuki Shogi. Otsuki Shogi had found the going to be very tough in the finals, but made clear with this win that it had indeed managed to close the gap with the big names quite a bit.

The sixth round became a dramatic round that will not be easily forgotten, especially not by Tanase. Tanase Shogi was playing Gekisashi and they played a very difficult game. Tanase Shogi refused to put the king in a safe spot and Gekisashi's king was also far from properly protected. The game was like a boxing match with both players continually throwing punches without being able to land a decisive one. When the game was about half way through, the game between YSS and Bonanza had finished with Bonanza winning. This meant that the winner of the game between Gekisashi and Tanase Shogi would also be the 2008 World Champion. Tanase Shogi was slowly starting to build a lead by exposing Gekisashi's king, while Gekisashi could not find a way to get to Tanase Shogi's king in the centre. Tanase Shogi made a nice brinkmate position against Gekisashi's king and Gekisashi had only a number of useless checks to extend the game, but without any hope of winning. Then word came that the game was over because the time was up. Tanase was overjoyed, because he was convinced that he had won the game. After all, the clock he had running had more than 2 minutes left for his program, while Gekisashi was more than two minutes over the time limit. Then Katsumata, the professional player who commented the game, congratulated Gekisashi with the tournament victory. Tanase was stunned and even called out to Katsumata that he made a mistake and that Tanase Shogi was the winner. However, on the big screen where the game was displayed for the audience, the last move that Tanase Shogi had sent to the server was not displayed. The final move there was Gekisashi's 189th move. Tanase finally realized that Tanase Shogi had lost the game on time according to the server. The tournament rules state that the time the server sends back to the programs is the official time used for the move, but Tanase still refused to believe that he had lost the game on time. Replaying the game, it turned out that the time used for each move as recorded by Tanase Shogi was identical to the time that had been recorded by the server! Tanase Shogi had lost this vital game because of an error in translating the time received from the server to the internal clock used by the program. It is hard to believe that 1) an experienced programmer like Tanase (10 years a participant in this tournament, including three World Championships with the program IS Shogi) would make such a mistake; 2) he didn't realize there was a mistake in two years of testing, 3) had the mistake turn up in a game that decided the World Championship and 4) having the mistake turn a certain victory into a defeat. If ever Murphy's Law was at work in computer shogi, there it was.

There was an awkward silence after the game. Usually there is a roar of applause for the tournament winner, but the confusion after the game and the way the title had gone to Gekisashi only lead to some uneasy congratulatory handshakes for the Gekisashi team, which was feeling a little embarrassed as well. The general feeling was that the title had not gone to the best program in the tournament. The final round rubbed more salt in the wound. While Tanase was staring in the distance for most of the time, his program happily butchered YSS (computer programs know no disappointment), while Bonanza crushed Gekisashi.

Because of these results, Bonanza came in third. YSS also had 4 points, losing its final three games, while Bingo Shogi reached 4 points by winning its last three games. Otsuki Shogi finished with 3 points, so it seems that Bingo Shogi and (to a lesser extent) Otsuki Shogi have closed the gap to the top. Nara Shogi beat Kakinoki Shogi to get at least one win in its first appearance in the final, while Kakinoki Shogi couldn't follow-up on its strong performance of the second preliminary round and lost all games.

| No. | Program Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Pt | SB | MD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Gekisashi | 6+ | 8+ | 7+ | 5+ | 4+ | 2+ | 3- | 6.0 | 18.0 | 12.0 |
| 2 | Tanase Shogi | 7+ | 6+ | 5+ | 3+ | 8+ | 1- | 4+ | 6.0 | 16.0 | 12.0 |
| 3 | Bonanza | 5- | 7+ | 8+ | 2- | 6- | 4+ | 1+ | 4.0 | 11.0 | 5.0 |
| 4 | YSS | 8+ | 5+ | 6+ | 7+ | 1- | 3- | 2- | 4.0 | 8.0 | 4.0 |
| 5 | Bingo Shogi | 3+ | 4- | 2- | 1- | 7+ | 6+ | 8+ | 4.0 | 8.0 | 4.0 |
| 6 | Otsuki Shogi | 1- | 2- | 4- | 8+ | 3+ | 5- | 7+ | 3.0 | 5.0 | 1.0 |
| 7 | Nara Shogi | 2- | 3- | 1- | 4- | 5- | 8+ | 6- | 1.0 | 0.0 | 0.0 |
| 8 | Kakinoki Shogi | 4- | 1- | 3- | 6- | 2- | 7- | 5- | 0.0 | 0.0 | 0.0 |

**Table. 3:** Results of the Finals

## 5.    The Exhibition

This year, there were two exhibition games. Japanese amateur champions Kato Yukio and Shimizugami Toru would play the winner and the runner-up. Shimizugami has been in great form recently, beating a number of professionals. Kato had played computer programs four times before in exhibition matches and had yet to lose against the computer. For Shimizugami it was his first encounter with the computer. Kato would first play runner-up Tanase Shogi and then Shimizugami would play Gekisashi. Time limits were 15 minutes per side followed by 30 seconds for each move. Although this time control favours the computer, the general opinion seemed to be that 1-1 was the likely and most desirable outcome (the computers would not be embarrassed).

The first game was already a big surprise. Computer veteran Kato played a natural looking pawn drop to improve his position in the early middle game and this turned out to be the decisive mistake! Tanase Shogi launched a devastating attack and Kato had to resign after a very short game. This loss put a lot of extra pressure on Shimizugami in the second game, but he seemed to deal with that pressure very well as he came out of the opening with a clear advantage. However, after that he rushed his attack, he too felt the endgame strength of the computer as Gekisashi attacked strongly without giving Shimizugami a chance to recover. Two wins for the computer!

## 6.    Conclusions

After the exhibition match, CSA Chairman Takizawa spoke of a historic day for computer shogi. Computer shogi has come of age and seems ready to make a final push to beat the top professional players. Still, there was a word of warning by both Tanase and Tsuruoka (Gekisashi programmer) after the game that the victory was mainly caused by having Kato and Shimizugami playing to the computer's strengths instead of its weaknesses. This may be true, but it is clear that the areas where human players can still outplay the computer are narrowing. This is great for computer shogi, because from this moment on human players will have to use all of their flexibility and inventiveness to win. We are at the brink of another great battle between man and computer and although there is not much doubt about the final

outcome, it will be exciting to watch. As Bonanza's programmer Hoki said at the party afterwards (admittedly, after having a few drinks): "No fun playing amateurs anymore. Bring on the pros!".