

REPORT ON THE 16TH CSA WORLD COMPUTER-SHOGI CHAMPIONSHIP
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Reijer Grimbergen¹

Department of Informatics, Yamagata University, Japan

1. INTRODUCTION

This year's Computer Shogi World Championship had a special buzz: BONANZA would be participating. BONANZA had become famous in a very short time, being a free shogi program that was made in about a year by a programmer with little knowledge of shogi. It had already beaten strong amateur players and had beaten last year's finalists KCC and GPS SHOGI in the Internet tournament played a few weeks before the CSA tournament. BONANZA would be a favorite to make it to the final round, but it was unclear how far it would go from there.

Another thing to look forward to was Tanase's new shogi program. Tanase is the main programmer of IS SHOGI (multiple World Champion), but he had decided to abandon the work on IS SHOGI to make a completely new program that would not only be much stronger, but had the higher aim of being strong enough to challenge top professionals. Tanase is one of the few Japanese I know who has no problem with expressing strong ambitions. His new program (unnamed in the final participant list) would definitely be one to watch.

2. THE FIRST PRELIMINARY STAGE

When I arrived on the first day, the tournament was already well underway (my program SPEAR was seeded, so I didn't have to play in the first preliminary round). Looking at the standings there was a first disappointment: Tanase's program was not there. He didn't seem to feel that his program was ready, so hopefully we will see it next year. In the end, 42 programs participated in the 2006 tournament, which was slightly up from last year, but still far away from the record of 55 programs in the 2001 tournament.

Tanase may not have been there, but BONANZA was doing as expected: it had won all its games so far. Looking at the programs in the first preliminary round, it didn't seem like there would be much competition for Bonanza. In the end, BONANZA won every game, followed by YAMADA SHOGI with one loss, AMANO SOHO, AUAU SHOGI, GARYU and WILDCAT with two losses and MY MOVE and MATTARI-YUCHAN with three losses. For MY MOVE it was the first time to qualify, but all the other programs had been in the second preliminary stage before.

3. THE SECOND PRELIMINARY STAGE

Before the second round started, I was presented with a certificate for participating in the CSA tournament for the 10th time. Not really anything special, as anyone who pays his entry fee ten times will get such a certificate. On the contrary, it made me feel a little mediocre: ten times in this tournament and I have never been able to reach the final. However, the certificate had some interesting information as well: it showed my program SPEAR's record in those ten tournaments. It had played 94 games in the CSA tournament so far, winning 48 games and losing 46. Barely a majority of wins, but more importantly, it meant that the sixth game in this tournament would be the 100th CSA game by SPEAR.

¹email: grim@yz.yamagata-u.ac.jp

No.	Program Name	1	2	3	4	5	6	7	Pt	SOS	SB	MD
*1	BONANZA	12+	18+	23+	3+	8+	5+	4+	7.0	25.5	25.5	19.5
*2	YAMADA SHOGI	10+	21+	3-	11+	13+	8+	7+	6.0	26.0	21.0	15.0
*3	AMANO SOHO 2	7+	15+	2+	1-	5+	17+	6-	5.0	33.0	21.0	12.0
*4	AUAU SHOGI	23-	14+	12+	10+	7+	9+	1-	5.0	26.0	18.0	11.0
*5	GARYU	14+	23+	20+	8+	3-	1-	17+	5.0	25.0	13.0	8.0
*6	WILDCAT	20-	16+	14+	19+	9+	7-	3+	5.0	23.5	17.5	10.0
*7	MY MOVE	3-	9+	10+	13+	4-	6+	2-	4.0	32.0	16.0	8.0
*8	MATTARI-YUCHAN	24+	17+	22+	5-	1-	2-	15+	4.0	27.0	9.0	5.0
9	OKI	15+	7-	11+	12+	6-	4-	19+	4.0	26.5	12.5	6.0
10	AVANTE	2-	11+	7-	4-	24+	12+	16+	4.0	26.0	11.0	6.0
11	DAEMON SHOGI	21+	10-	9-	2-	19+	23+	13+	4.0	22.5	8.5	4.5
12	MARUYAMA SHOGI	1-	13+	4-	9-	21+	10-	20+	3.0	27.0	7.0	2.0
13	RYUMA SHOGI	18+	12-	16+	7-	2-	22+	11-	3.0	24.5	7.5	2.5
14	SUGI SHOGI	5-	4-	6-	21+	18-	20+	22+	3.0	23.5	6.0	2.0
15	GASHO!	9-	3-	21+	23+	20-	16+	8-	3.0	21.0	6.0	2.0
16	HIT SHOGI + SS	19+	6-	13-	24+	22+	15-	10-	3.0	20.5	5.5	2.0
17	NARIKIN SHOGI	22-	8-	24+	18+	23+	3-	5-	3.0	20.5	4.5	1.0
18	SEXY AI-CHAN	13-	1-	19=	17-	14+	21-	24+	2.5	21.5	4.0	0.0
19	HAYABUSA	16-	20+	18=	6-	11-	24+	9-	2.5	21.5	3.0	0.0
20	GOD SHOGI	6+	19-	5-	22-	15+	14-	12-	2.0	23.5	8.0	0.0
21	TSUBAKIHARA	11-	2-	15-	14-	12-	18+	23+	2.0	22.5	3.5	0.0
22	OJIRO	17+	24-	8-	20+	16-	13-	14-	2.0	19.0	5.0	0.0
23	MASUDA SHOGI	4+	5-	1-	15-	17-	11-	21-	1.0	29.0	5.0	0.0
24	MISAKI	8-	22+	17-	16-	10-	19-	18-	1.0	21.0	2.0	0.0

Table 1: Results of the First Qualification Round.

* BONANZA, YAMADA SHOGI, AMANO SOHO 2, AUAU SHOGI, GARYU, WILDCAT, MY MOVE and MATTARI-YUCHAN qualify for the second qualification round.

After five rounds, both SPEAR and the English program SHOTEST had two wins and three losses. SPEAR would play its 100th CSA game against the only other Western program in the tournament! I have been working together (and sharing beers) with Jeff Rollason, the programmer of SHOTEST for a long time now, but this was the first time we ever played in the tournament, so this was double special. I would have liked to add that SPEAR won a brilliant game, but the truth was that the game was pretty bad, particularly by SPEAR. Not a game I would like to remember, but because of its special occasion I think I will have no choice!

Meanwhile, at the top of the table there was also a lot of drama. OTSUKI SHOGI, hardly a favorite to qualify for the finals, lost its first game but then went on to win 8 games in a row to claim first place. KAKINOKI SHOGI, which had failed to qualify last year, won its first seven games to be the first program to qualify. It then lost two to drop to second place. TACOS, the program from Hiroyuki Iida's research lab won the first five games, but then lost two against OTSUKI SHOGI and KAKINOKI SHOGI, making qualification hardly straightforward, but wins against KANAZAWA SHOGI and BONANZA were good for third place. BONANZA also qualified, despite losses against BINGO SHOGI and TACOS.

These were the four programs with 7 wins and they would be accompanied by one program with 6 points. It turned out that DRAGON'S EGG had the highest sum of opponent's score. This must have been a disappointment for BINGO SHOGI, which seemed to have had the tougher opponents (playing the first four programs, while DRAGON'S EGG had only played against number 1 and 4), but the fact that Bingo had been paired against some low programs (like SPEAR!) made the difference. GPS SHOGI also missed out on the final, but they could point at a single game that did them in: a loss against USAPYON.

4. THE FINALS

Even though the first round of the finals is always a match-up between seeded programs and the programs that qualified from the second preliminary stage, every year something unforeseen happens. This year, the draw between GEKISASHI and KAKINOKI SHOGI was the talk of the first round. The game was over in an instant by

No.	Program Name	1	2	3	4	5	6	7	8	9	Pt	SOS	SB	MD
*1	OTSUKI SHOGI	4-	18+	23+	16+	13+	6+	3+	5+	2+	8.0	46.0	39.0	30.0
*2	KAKINOKI SHOGI	21+	14+	13+	8+	7+	3+	6+	4-	1-	7.0	50.0	35.0	25.0
*3	TACOS	20+	10+	18+	5+	6+	2-	1-	14+	4+	7.0	49.0	34.0	24.0
*4	BONANZA	1+	24+	6-	9+	22+	7+	10+	2+	3-	7.0	47.0	34.0	25.0
*5	DRAGON'S EGG	12+	11+	7-	3-	9+	8+	18+	1-	16+	6.0	47.5	26.5	18.5
6	BINGO SHOGI	23+	19+	4+	22+	3-	1-	2-	10+	8+	6.0	46.0	24.0	15.0
7	GPS SHOGI	17+	15+	5+	13-	2-	4-	14+	11+	9+	6.0	45.5	27.5	18.0
8	K-SHOGI	11+	12+	14-	2-	19+	5-	13+	15+	6-	5.0	43.5	20.5	12.5
9	KINOA SHOGI	10+	20+	19-	4-	5-	22+	15+	18+	7-	5.0	39.0	17.0	10.0
10	NARA SHOGI	9-	3-	16+	23+	24+	18+	4-	6-	14+	5.0	39.0	14.0	9.0
11	SHORE	8-	5-	22-	21+	20+	17+	19+	7-	13+	5.0	35.5	16.5	9.5
12	WILDCAT	5-	8-	17=	15-	23+	20-	24+	21+	18+	4.5	30.5	9.0	5.0
13	USAPYON	15+	17+	2-	7+	1-	14-	8-	16+	11-	4.0	46.5	17.5	8.0
14	KANAZAWA SHOGI	22+	2-	8+	24+	16-	13+	7-	3-	10-	4.0	41.0	12.0	6.0
15	SHOTEST V8.0	13-	7-	21+	12+	18-	19+	9-	8-	17+	4.0	37.0	14.0	6.5
16	NAZOTEKI DENKI	19-	23+	10-	1-	14+	24+	22+	13-	5-	4.0	35.0	9.0	4.0
17	GARYU	7-	13-	12=	20+	21-	11-	23+	24+	15-	3.5	32.5	6.0	2.0
18	KFEND	24+	1-	3-	19+	15+	10-	5-	9-	12-	3.0	43.5	8.0	3.0
19	SPEAR	16+	6-	9+	18-	8-	15-	11-	22+	20-	3.0	37.0	11.0	4.0
20	MY MOVE	3-	9-	24-	17-	11-	12+	21-	23+	19+	3.0	34.0	9.5	3.0
21	AMANO SOHO 2	2-	22-	15-	11-	17+	23-	20+	12-	24+	3.0	32.0	7.5	3.0
22	YAMADA SHOGI	14-	21+	11+	6-	4-	9-	16-	19-	23-	2.0	39.0	8.0	0.0
23	MATTARI-YUCHAN	6-	16-	1-	10-	12-	21+	17-	20-	22+	2.0	39.0	5.0	0.0
24	AUAU SHOGI	18-	4-	20+	14-	10-	16-	12-	17-	21-	1.0	37.0	3.0	0.0

Table 2: Results of the Second Qualification Round.

* OTSUKI SHOGI, KAKINOKI SHOGI, TACOS, BONANZA, and DRAGON'S EGG qualify for the finals.

repetition of moves in the early middle game. GEKISASHI had some penalty to avoid a draw, but it wasn't set high enough, while KAKINOKI SHOGI considered itself the weaker program in this game and didn't try to avoid a draw.

The most closely watched game was of course the game between YSS and BONANZA. A very interesting game, but YSS always seemed a little bit better and won. A small disappointment for all the BONANZA fans who were following the tournament over the Internet (this year, each round a number of games was broadcast live for the first time).

In the second round, the results were more or less as expected. The only result that could have been considered an upset was the victory of BONANZA against KCC, but because BONANZA had won against KCC in the Internet tournament a month ago, so this was actually not a shocking result. It would have an important impact on the final outcome of the tournament, though.

Even more impact on the final result had the game GEKISASHI-BONANZA in the third round. GEKISASHI had a mate and didn't find it! Computers are much better than human players when it comes to finding mate so it is incredible that this happened in the biggest game of this year's championship. More salt in the wound for the GEKISASHI programmers was that the commercial version of GEKISASHI (i.e. last year's version) played the winning moves instantly. Lucky break for BONANZA number 1.

After three rounds YSS seemed to be in control with three wins, but an unexpected loss against TACOS in the fourth round threw the tournament wide open again. Lucky break for BONANZA number 2! In the past, the CSA tournament has often been a runaway victory, with the winning program already decided before the final round, but this year the suspense would last until the end. Significant was that BONANZA was co-leader after the 4th round, and that it had already played the strongest programs.

YSS took the first big hurdle by beating GEKISASHI in the 5th round, so there were three programs with four wins: YSS, BONANZA and KCC. The game between YSS and KCC in the 6th round was supposed to decide which program would stay in the lead with BONANZA, but after YSS started an attack that weakened its iron strong position, the game ended in a draw by repetition of moves. Unlike the game between GEKISASHI and KAKINOKI SHOGI, this was a repetition of moves that neither program could get out off. However, it also meant

No	Program Name	1	2	3	4	5	6	7	Pt	SB
1	BONANZA	2-	3+	5+	6+	8+	4+	7+	6.0	16.5
2	YSS	1+	6+	7+	4-	5+	3=	8+	5.5	13.0
3	KCC SHOGI	7+	1-	4+	8+	6+	2=	5+	5.5	11.0
4	TACOS	8+	5-	3-	2+	7+	1-	6+	4.0	9.0
5	GEKISASHI	6=	4+	1-	7+	2-	8+	3-	3.5	5.0
6	KAKINOKI SHOGI	5=	2-	8+	1-	3-	7+	4-	2.5	1.0
7	DRAGON'S EGG	3-	8+	2-	5-	4-	6-	1-	1.0	0.0
8	OTSUKI SHOGI	4-	7-	6-	3-	1-	5-	2-	0.0	0.0

Table 3: Results of the Finals.

that BONANZA was the only program with 5 points and only needed a win against DRAGON'S EGG to win the tournament. Lucky break for BONANZA number 3!

DRAGON'S EGG had won only a single game so far, but it had beaten BONANZA in the Internet tournament, so this was not necessarily an easy game for BONANZA. However, as the game went, from very early on there was not much doubt about its outcome. DRAGON'S EGG played some strange moves in the opening and BONANZA didn't have much trouble getting an overwhelming position. DRAGON'S EGG fought long and hard, but it never got a real chance. BONANZA won the CSA tournament the first time it participated, something that had never happened before (except for the first CSA tournament of course). Such an achievement was considered impossible with the high level of the top programs. A shocking result indeed.

It was also the first time that the programmer of the winning program was not at the tournament. At the time of the tournament, Kunihito Hoki was in Canada and his program was operated by someone else. However, he did follow the tournament and had to stay up very late for the final result, but it must have been worth it.

5. CONCLUSIONS

Who is Kunihito Hoki and why is his program so strong? Both questions don't have a satisfying answer at the moment. The only things that are known about Mr.Hoki is that he is a Japanese who at the time of tournament was working as a post-doc researcher at the University of Toronto. I was told that he majored in computer science, but in Canada he was part of a chemistry group. In any case, his research has nothing to do with AI or computer games. BONANZA was made in his free time and it seems like he only used publications on computer chess to make his program. There is quite a lot of literature on computer shogi, but Hoki said that he only knew about that after he had made BONANZA. Hoki also doesn't know very much about shogi and it seemed that Bonanza was made stronger by using machine learning techniques. This might sound like a straightforward approach, but most of the shogi programmers know the chess literature and tried similar things without much success so the question still remains what method Hoki has used to train his program. Mr. Hoki will return to Japan this year and is scheduled to give presentation about BONANZA's inner workings at the annual Game Programming Workshop in November.

One thing that is clear is that the program is very fast. There was quite a lot of special hardware in this tournament, but BONANZA ran on an off-the-shelf notebook with two processors. Despite this, BONANZA in general was able to search 800,000 positions per second, compared to about 500,000 for GEKISASHI (other programs are slower because of more knowledge and less search). With this, BONANZA could usually see more than 10 moves ahead, which seems to solve most tactical problems and gave its accurate positional evaluation the control it needed to win this tournament.

Despite this remarkable result, it was clear that BONANZA needed some luck to take first place. After the tournament, there were some shocked faces by the people who had been in this tournament for many years and there was even some grumbling about BONANZA not being the strongest program in this tournament. Whether this was sour grapes or had an element of truth I don't know, but BONANZA has clearly woken people up. Like FRUIT showed in computer chess, we may have been making our programs too complex to handle. In the end, shogi may be much closer to chess than we thought. Could HYDRA for shogi be enough to challenge the human world champion? We will not know until some major Japanese company is ready to put shogi under its wings.