The 2022 Computer Olympiad

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Abstract. The 25th Computer Olympiad was held online during July/August 2022. With 53 participating programs competing in 18 events, the event was a success.

1. INTRODUCTION

The 25th Computer Olympiad was our third experience with an online event. Following the success of the 2020 and 2021 online Olympiads, the 2022 event followed the same tried-and-tested format. This report summarizes our observations and the results from this event.

The 2022 Olympiad had an almost identical format to the previous event (Computer Olympiad, 2022). There were no significant changes to the rules used in the previous year (Computer Olympiad Rules, 2022). The event was timed for the end of July to overlap with the World Computer Chess Championships (held in person at the IJCAI conference in Vienna, Austria).

As done for the past two years, each Olympiad competition was self-organized. For each event, the participants were asked to agree on the following competition details:

- Format, with a round-robin being the standard.
- Number of games played between competitors (more is better).
- Time controls (most games have an established standard).
- Playoffs. For most events, the final round-robin standings served to decide on the medals. Short playoff matches were used to break ties.

The original schedule had one week to complete all the games, but some events ran for up to three weeks because of scheduling constraints.

2. RESULTS

There were 53 programs competing in 18 events. An additional 10 competitions were not held given that there was only one entry.

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Compared to our first online Olympiad in 2020 (Iida *et al*., 2021a), the number of competitions has dropped from 21 to 18, and the number of participating programs has shrunk from 65 to 53. This is a big concern, as discussed in the next section.

The ICGA congratulations all the gold, silver, and bronze medal winners, and thanks all the participants of the 25th Computer Olympiad. The Appendix includes the results from all 18 competitions.

3. PERSPECTIVES

As discussed in the report on last year's Olympiad (Iida *et al*., 2021b), the move to online raises two critical issues that the ICGA needs to resolve: a) online, in-person, or a hybrid Olympiad; and b) increasing the number of entries.

It's hard to argue with the convenience of holding the Olympiad online. It saves in (expensive) travel and hotel costs. For some, these costs have been an impediment to participation. Even in a post-pandemic world, it is hard to imagine going back to an in-person event, with all the additional costs and logistics of organizing the event and hosting perhaps 50 international people.

Despite the ease with which anyone in the world can participate in an online Olympiad, we still struggle at growing the size of the event. In the three online Olympiads, participation has gone from 65 (2020) to 60 (2021) to 53 (2022), and the number of contested events went from 21(2020) to 22 (2021) to 18 (2022). Further, in 2022 six games had only two competitors, putting the future of these competitions in doubt.

To repeat the question posed in last year's report (Iida *et al*., 2021a), how do we increase the number of Olympiad entries?

> Being online allows the event to easily handle more entries without incurring additional costs (which is not true for the in-person events). The Olympiad is advertised on the ICGA web site (low traffic), through several mailing lists (probably low impact), and from various mailouts (mostly to past participants). None of these methods seems to be reaching a new audience. Globally, game programming is a popular activity, but we have been unable to reach more game-AI programming aficionados.

Without new enthusiasts wanting to compete, it's hard to see the long-term viability of this event. After 33 years of Computer Olympiads, the future is murky. Your suggestions for sustaining this important event are most welcome (contact jonathan@ualberta.ca).

APPENDIX

Amazons

This competition had only one entry and was not held.

Arimaa

This competition had only one entry and was not held.

Ataxx

Deep Nikita: Andrew Lin

Program	Deep Nikita	Xxatar
Deep Nikita	**X**	1
Xxatar	3	**X**

Xxatar: Quentin Cohen-Solal and Tristan Cazenave

Congratulations to the *Xxatar* team for winning the Gold Medal in Ataxx.

Breakthrough

jhsu_Breakthrough: Tse-An Hsu and Shun-Shii Lin

R2D2: Quentin Cohen-Solal and Tristan Cazenave

YJ_Breakthrough: Yun-Jie Ho and Shun-Shii Lin

Program	jhsu_Breakthrough	R2D2	YJ_Breakthrough	Total
jhsu_Breakthrough	**X**	0	0	**0**
R2D2	2	**X**	2	**4**
YJ_Breakthrough	2	0	**X**	**2**

Congratulations to the $R2D2$ team for winning the Gold Medal in Breakthrough.

Congratulations to the *YJ_Breakthrough* team for winning the Silver Medal in Breakthrough.

Bridge (HoneyMoon)

aiia_bridge: Jun-Bao Lin, Jun-Yen Lin, Jen-Bun Yeh, and Hsin-Hung Chou

GodJimmy: Chen-En Yang, Yen-Chi Chen, and Shun-Shii Lin

JadeHare: Chieh-Yu Chen and Shun-Shii Lin

Program	aiia_bridge	GodJimmy	JadeHare	Total
aiia_bridge	**X**	0	0	**0**
GodJimmy	1	**X**	0	**1**
JadeHare	1	1	**X**	**2**

Congratulations to the *JadeHare* team for winning the Gold Medal in HoneyMoon Bridge.

Congratulations to the *GodJimmy* team for winning the Silver Medal in HoneyMoon Bridge.

Chess (Chinese)

alphacat: Liu Jin

garlic: Chang-Jiun Wu

Stratar: Quentin Cohen-Solal and Tristan Cazenave

Program	alphacat	garlic	Stratar	Total
alphacat	**X**	2	2	**4**
garlic	0	**X**	2	**2**
Stratar	0	0	**X**	**0**

Congratulations to the *alphacat* team for winning the Gold Medal in Chinese Chess.

Congratulations to the *garlic* team for winning the Silver Medal in Chinese Chess.

Chess (Chinese Dark)

alphacat: Liu Jin

CLAP_CDC: Chu-Hsuan Hsueh, Yuan-Hao Chen, Wen-Jie Tseng, and I-Chen Wu

DarkKnight: Chu-Hsuan Hsueh, Wen-Jie Tseng, and I-Chen Wu

Poyo: Ping Chun Chen and Hsuan Yu Yaung

Yahari: Jr-Chang Chen, You-Cheng Syu, Gang-Yu Fan, Ting-Yu Lin, Tsan-sheng Hsu, Hsuan-Yu Wang, and Jun-Ping Chen

Program	alphacat	CLAP_CDC	DarkKnight	Poyo	Yahari	Total
alphacat	**X**	1	1	2	1	**5**
CLAP_CDC	1	**X**	1.5	2	1.5	**6**
DarkKnight	1	0.5	**X**	0	1.5	**3**
Poyo	0	0	2	**X**	1.5	**3.5**
Yahari	1	0.5	0.5	0.5	**X**	**2.5**

Congratulations the *CLAP_CDC* team for winning the Gold Medal in Chinese Dark Chess.

Congratulations the *alphacat* team for winning the Silver Medal in Chinese Dark Chess.

Congratulations to the *Poyo* team for winning the Bronze Medal in Chinese Dark Chess.

Clobber

This competition had only one entry and was not held.

Connect6

Bernard-Lowe: Quentin Cohen-Solal and Tristan Cazenave

CLAP_Connect6: Jui-Te Chin, Shao-Xiong Zheng, Yuan-Hao Chen, and I-Chen Wu

Peace: Yu-Chang Lin and Shun-Shii Lin

Program	Bernard-Lowe	CLAP_Connect6	Peace	Total
Bernard-Lowe	**X**	0-2	2-0	**2**
CLAP_Connect6	2-0	**X**	2-0	**4**
Peace	0-2	0-2	**X**	**0**

Congratulations to the *CLAP_Connect6* team for winning the Gold in Connect6.

Congratulations to the *Bernard-Lowe* team for winning the Silver Medal in Connect6.

Draughts (Brazilian)

EVE: Quentin Cohen-Solal and Tristan Cazenave

Tdk88: Ton Tillemans

Program	EVE	Tdk88	Total
EVE	**X**	1-0-1-0	**2**
Tdk88	1-2-1-2	**X**	**6**

Congratulations to the *Tdk88* team for winning the Gold Medal in Brazilian Draughts.

Program	T-900-Cameron	Tdkcan	Total
T-900-Cameron	**X**	2-2-2-2	**8**
Tdkcan	0-0-0-0	**X**	**0**

Draughts (Canadian)

T-900-Cameron: Quentin Cohen-Solal and Tristan Cazenave

Tdkcan: Ton Tillemans

Congratulations to the *T-900-Cameron* team for winning the Gold Medal in Canadian Draughts.

Draughts (International)

TDking: Ton Tillemans

Zoe-A: Quentin Cohen-Solal and Tristan Cazenave

Program	TDking	Zoe-A	Total
TDking	**X**	2-2-0-1-1-1	**7**
Zoe-A	0-0-2-1-1-1	**X**	**5**

Congratulations to the *TDking* team for winning the Gold Medal in International Draughts.

EinStein Würfelt Nicht

Monte_Alpha: Sin-Yi Chiu and Shun-Shii Lin

Reinstein: Zih-Yang Hsu

YJ_EinStein: Yun-Jie Ho and Shun-Shii Lin

Program	Monte_Alpha	Reinstein	YJ_EinStein	Total	TB1	TB2	Final
Monte_Alpha	**X**	6	9	**15**	3	5	8
Reinstein	6	**X**	9	**15**	3	1	4
YJ_EinStein	3	3	**X**	**6**			

TB1 is the first tiebreak match. TB2 is the second tiebreak match.

Congratulations to the *Monte_Alpha* team for winning the Gold Medal in EinStein Würfelt Nicht.

Congratulations to the *Reinstein* team for winning the Silver Medal in EinStein Würfelt Nicht.

Go 9 × 9

This competition had only one entry and was not held.

Gomoku (Outer-Open)

CLAP_OOG: Wei-Chen Liao, Po-Wei Huang, Shao-Xiong Zheng, Yuan-Hao Chen, and I-Chen Wu

Marvin: Quentin Cohen-Solal and Tristan Cazenave

TBMCTS_v2: Chih-Hung Chen; Hao-Han He; Han-Siang Li; Sin-Jie Li; Yen-Chi Chen; and Shun-Shii Lin

Program	CLAP_OOG	Marvin	TBMCTS_v2	Total
CLAP_OOG	**X**	2	2	**4**
Marvin	0	**X**	2	**2**
TBMCTS_v2	0	0	**X**	**0**

Congratulations to the *CLAP_OOG* team for winning the Gold Medal in Outer-Open Gomoku.

Congratulations to the *Marvin* team for winning the Silver Medal in Outer-Open Gomoku.

Havannah 8 × 8

This competition had only one entry and was not held.

Havannah 10 × 10

This competition had only one entry and was not held.

Hex 11 × 11

This competition had only one entry and was not held.

Hex 13 × 13

This competition had only one entry and was not held.

Hex 19 × 19

This competition had only one entry and was not held.

Lines of Action

Clank: Quentin Cohen-Solal and Tristan Cazenave

MC-LOA: Mark Winands

Program	*Clank*	*MC-LOA*	**Total**
Clank	**X**	4.5	**4.5**
MC-LOA	5.5	**X**	**5.5**

Congratulations to the *MC-LOA* team for winning the Gold Medal in Lines of Action.

Mahjong

FatesGate: Zheng-Han Yeh

Seofon_v2: Zong-Han Lin, Jiun-Hong Chen, Yu-Chen Lin, and Shun-Shii Lin

SimCat: Shih-Chieh Tang, Fong-Sheng Liao, and I-Chen Wu

sparrow_v2: Hsin-Hsueh Chen

VeryLongCat: Shih-Chieh Tang, Li-Kai Chuang, and I-Chen Wu

Program	*Game 1*	*Game 2*	*Game 3*	*Game 4*	*Game 5*	**Score**
FatesGate	34,500	6,000	64,500		−22,500	**82,500**
Seofon_v2	−60,500	−10,000	−65,000	0		**−135,000**
SimCat	66,000	8,500		32,500	30,500	**137,500**
sparrow_v2	−40,000		−69,500	−103,000	−50,500	**−263,000**
VeryLongCat		−4,500	70,000	70,500	42,500	**178,500**

Congratulations to the *VeryLongCat* team for winning the Gold Medal in Mahjong.

Congratulations to the *SimCat* team for winning the Silver Medal in Mahjong.

Congratulations to the *FatesGate* team for winning the Bronze Medal in Mahjong.

Nonogram

Defense: Jia-Jun Yeh, Kuo-Chan Huang, Wei-Chiao Huang, Yan-Rong Guo, De-Rong Sung, and Tzung-Shuan Tsai

Requim: Yen-Chi Chen and Shun-Shii Lin

The Heirs: Jia-Jun Yeh, Kuo-Chan Huang, Wei-Chiao Huang, Yan-Rong Guo, and Tzung- Shuan Tsai

Program	Problems Solved	Time (seconds)
Defense	1000	**817.849**
Requiem	1000	**593.104**
The Heirs	1000	**757.607**

Congratulations to the *Requiem* team for winning the Gold Medal in Nonogram.

Congratulations to the *Heirs* team for winning the Silver Medal in Nonogram.

Othello (8 × 8) (4)

Aiia_othello: Yi-Chung Chang, Ho-Chen Yen, and Hsin-Hung Chou

CLAP_Othello: Heng-Yi Chiu, Po-Yu Liu, Jui-Te Chin, Yuan-Hao Chen, and I-Chen Wu

Maverick: Yen-Chi Chen and Shun-Shii Lin

Réplicateur #8: Quentin Cohen-Solal and Tristan Cazenave

Program	Aiia_othello	CLAP_Othello	Maverick	Réplicateur #8	Total
Aiia_othello	**X**	0	0	0	**0**
CLAP_Othello	4	**X**	0	0	**4**
Maverick	4	4	**X**	3	**11**
Réplicateur #8	4	4	1	**X**	**9**

Congratulations to the *Maverick* team for winning the Gold Medal in 8 × 8 Othello.

Congratulations to the *Réplicateur #8* team for winning the Silver Medal in 8 × 8 Othello.

Congratulations to the *CLAP_Othello* team for winning the Bronze Medal in 8 × 8 Othello.

Othello (10 × 10) (1)

This competition had only one entry and was not held.

Othello (16 × 16) – variant (3)

Connect16: Chuang-Yeh Chiu

HUgame: Jung-Kuie Yang

Tarogo: Shi-Jim Yen

Program	Connect16	HUgame	Tarogo	Total
Connect16	**X**	0	0	**0**
HUgame	2	**X**	0.5	**2.5**
Tarogo	2	1.5	**X**	**3.5**

Congratulations to the *Tarogo* team for winning the Gold Medal in 16 × 16 Othello (variant).

Congratulations to the *HUgame* team for winning the Silver Medal in 16 × 16 Othello (variant).

Santorini (2)

Deep Nikita: Andrew Lin

Théras: Quentin Cohen-Solal and Tristan Cazenave

Program	Deep Nikita	Théras
Deep Nikita	**X**	1
Théras	3	**X**

Congratulations to the *Théras* team for winning the Gold Medal in Santorini.

Surakarta (3)

Athénan: Quentin Cohen-Solal and Tristan Cazenave

FuChou: Jia-Fong Yeh, Yen-Chi Chen, and Shun-Shii Lin

HSNU1536-SURAKARTA: En-Chieh Kuo, Tzu-Jui Liu, Zih-Lun Peng, Chih-Hung Chen, and Shun-Shii Lin

Program	Athénan	FuChou	HSNU1536-SURAKART	Total
Athénan	**X**	2	2	**4**
FuChou	0	**X**	2	**2**
HSNU1536-SURAKART	0	0	**X**	**0**

Congratulations to the *Athénan* team for winning the Gold Medal in Surakarta.

Congratulations to the *FuChou* team for winning the Silver Medal in Surakarta.

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