

Orchestrating a brighter world

NEC

SCML 2024 @ ANAC @ IJCAI

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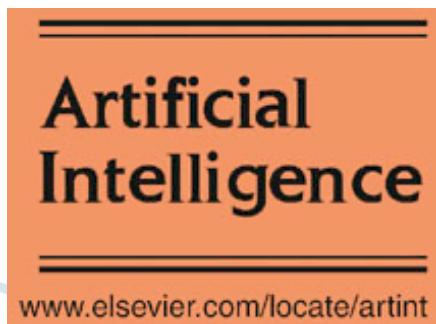
⁶ MIT, USA

⁷ IntentExchange, Japan

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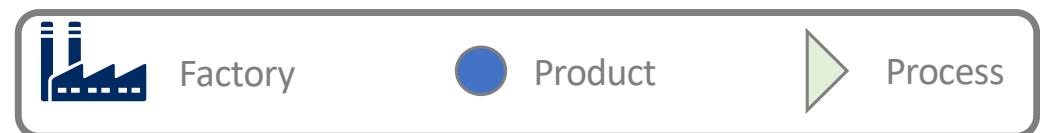
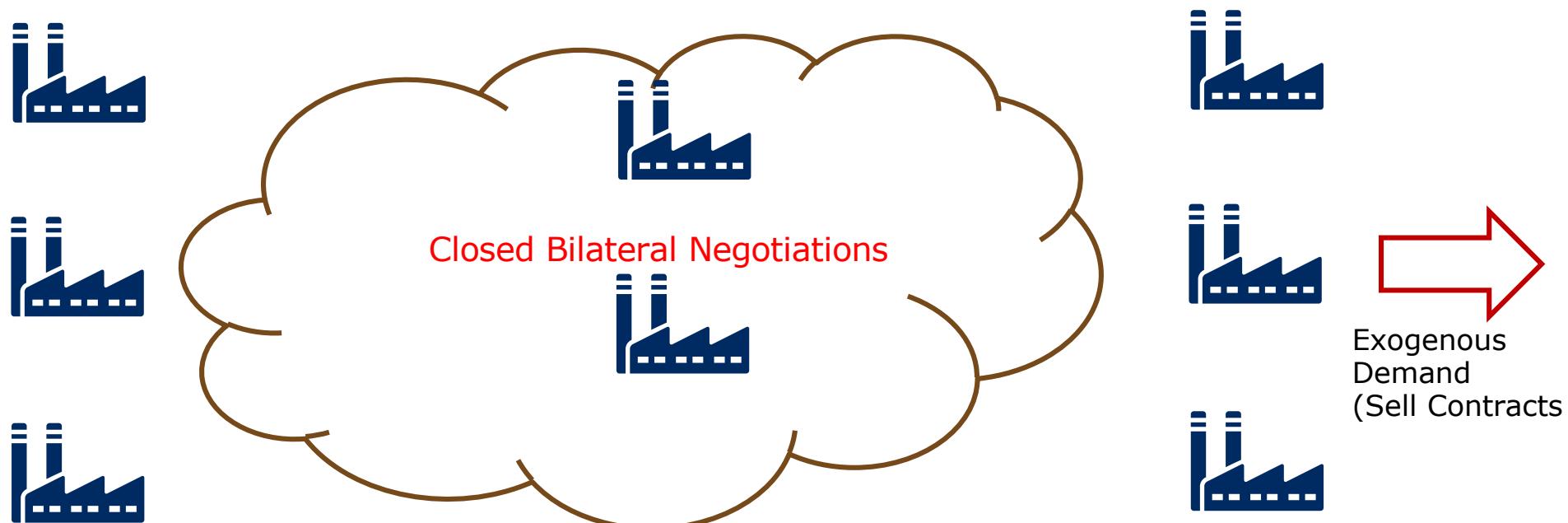
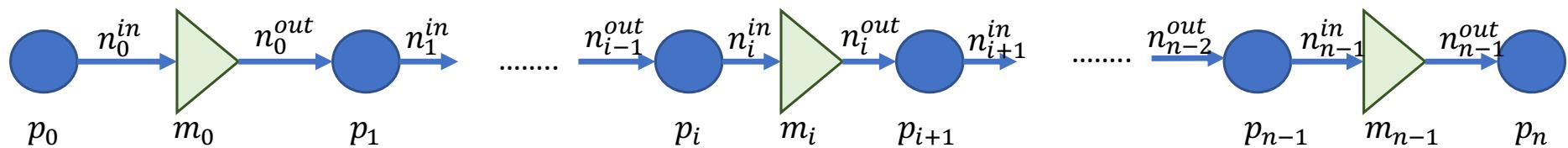


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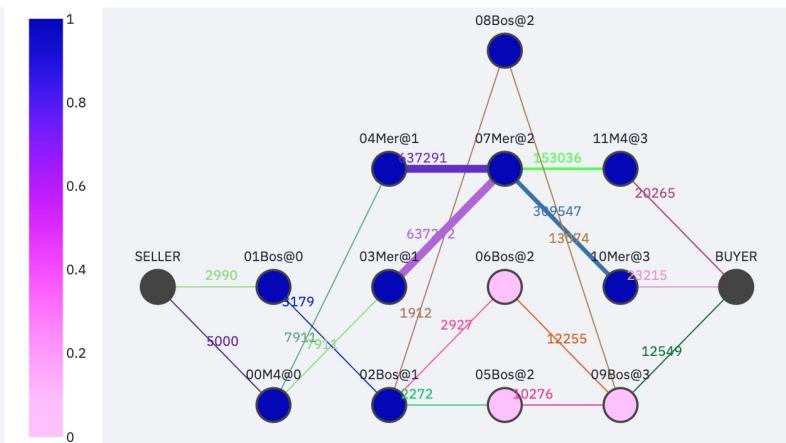
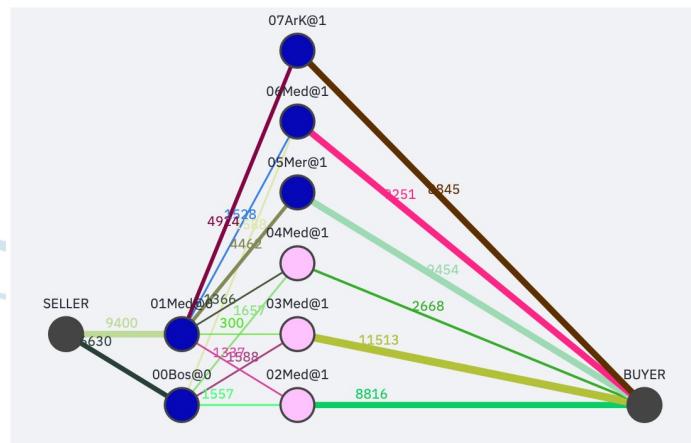
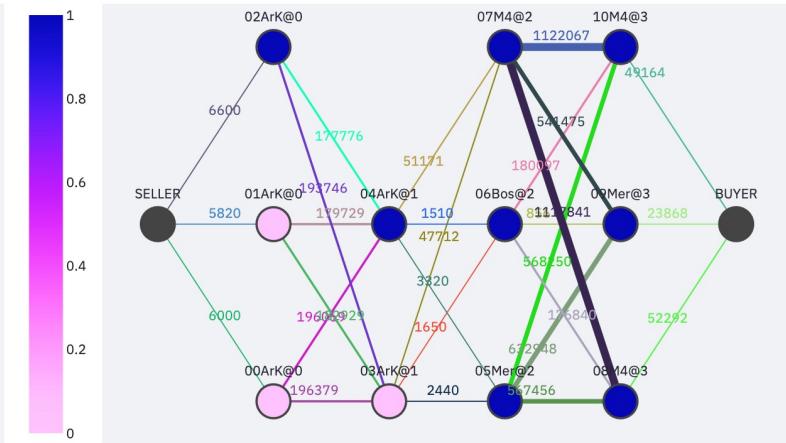
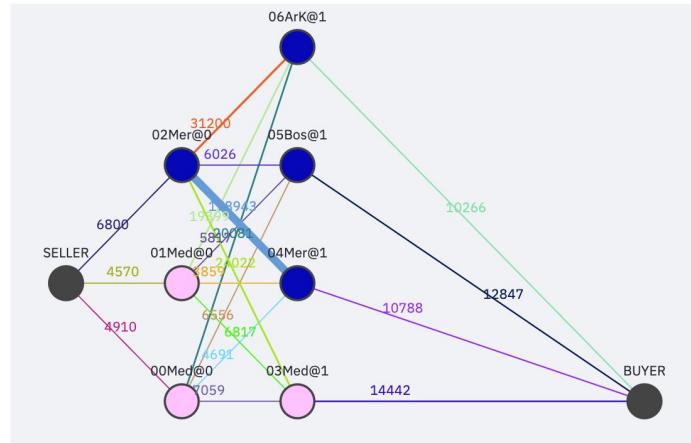
NEC

What is SCML

- ✓ **Goal:** move automated negotiation research further toward the real world
- ✓ **Guiding Principles:**
 - ✓ Simple enough but not too simple
 - ✓ Continuity matters
- ✓ **Domain:**
 - ✓ Situated concurrent negotiation within a market → Oneshot
 - ✓ Repeated sequential concurrent negotiation within a market → Standard



Examples from the Standard Track



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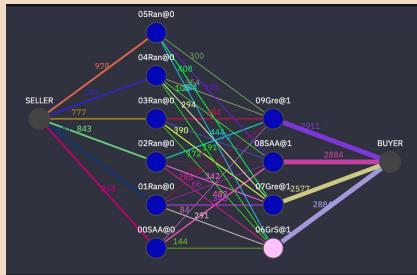
The Two Tracks

OneShot

- Delivery is always today
- N. intermediate products: 1
- Perishable Products
- Small Price Range
- Small Quantity Range



- Profit is defined per step.
 - A greedy ufun is known
- Concurrent Negotiation
 - Long term planning

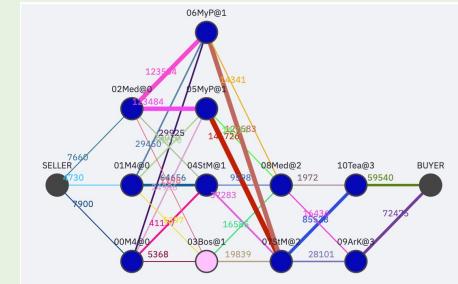


Standard

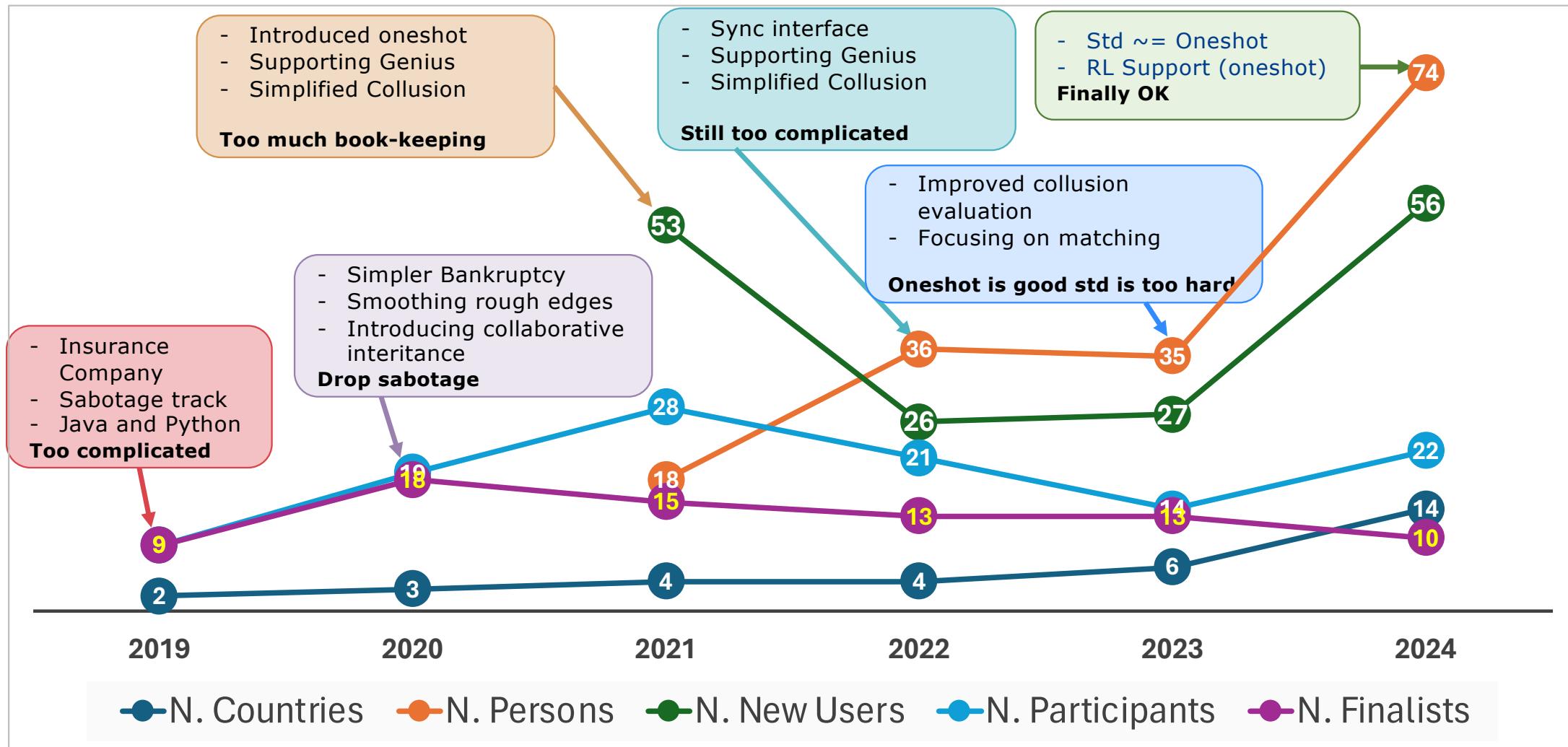
- Delivery time is negotiable
- N. Intermediate products: 3
- Accumulated Inventory
- Large Price Range
- Large Quantity Range



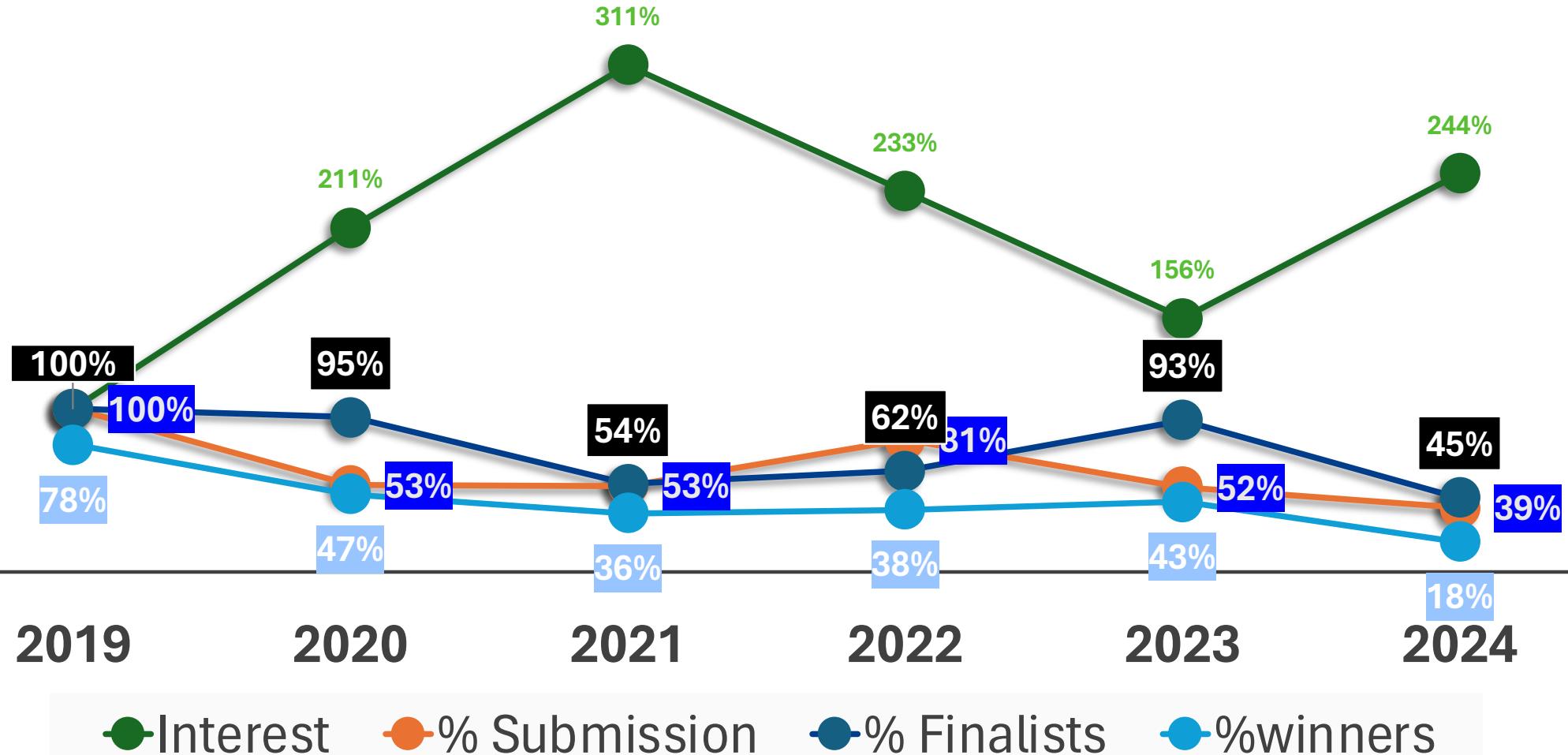
- Profit is known only ex-post
 - No greedy ufun is known
- Long term Planning
 - Concurrent negotiation



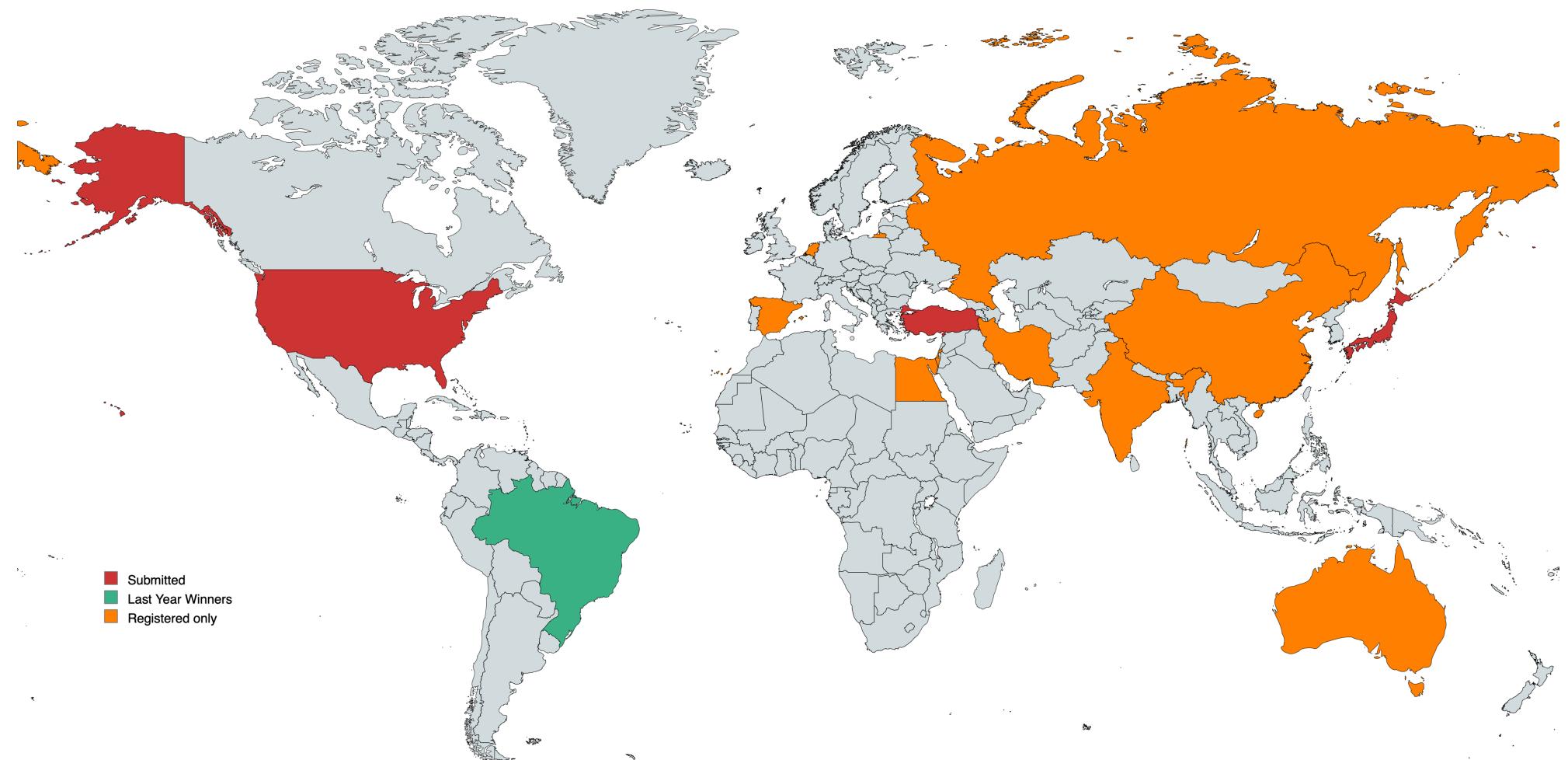
SCML Growth



SCML Growth



Distribution of Participants



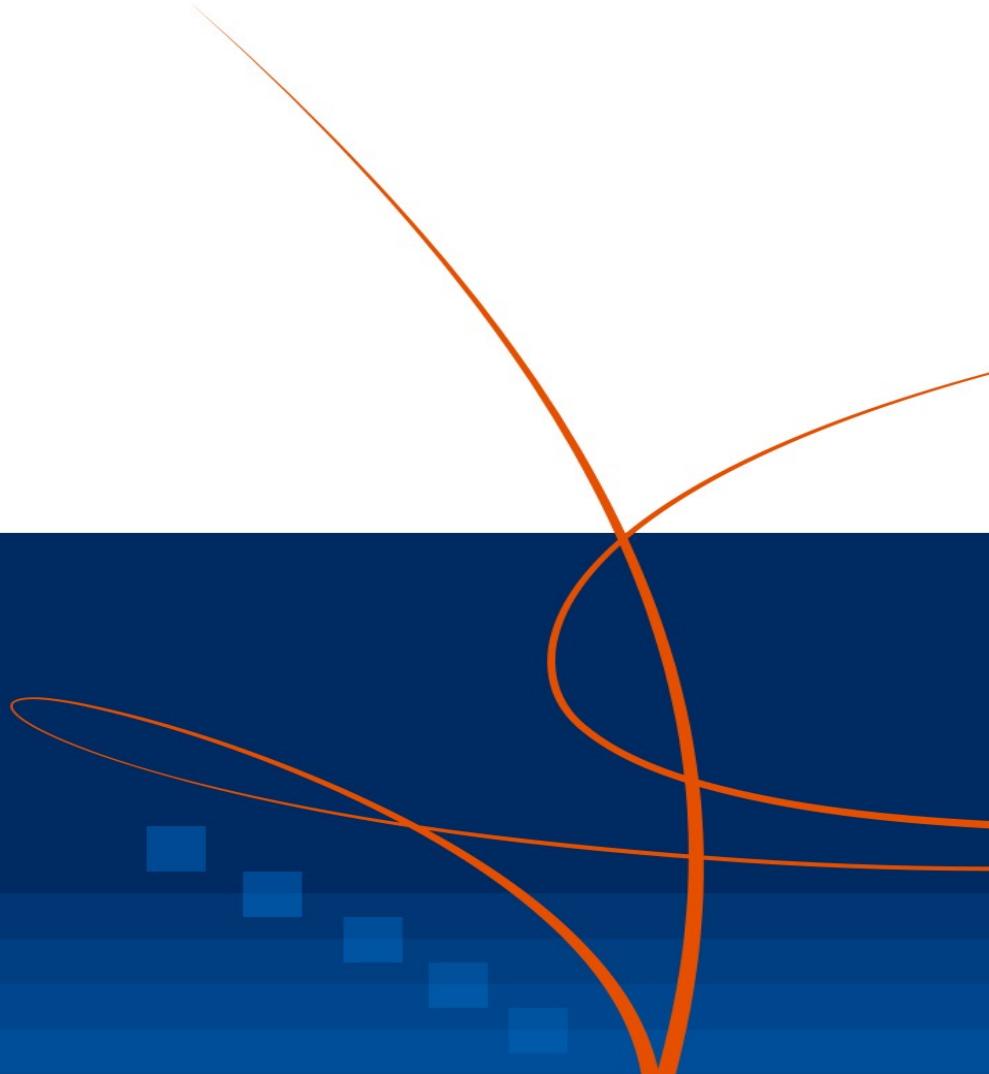
- Submitted
- Last Year Winners
- Registered only

Created with [mapchart.net](#)

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Online Competition



Online Competition



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Home Leader Board

Login Toggle Dark

SCML 2023

Part of the [ANAC Competition @AAMAS 2023](#)

AGENT SUBMISSION IS CLOSED

REPORT SUBMISSION IS CLOSED

The qualification round of SCML 2023 is concluded. We received 25 submissions from 6 countries. Seventeen of these were qualified to enter the official competition. These are the results of the qualifications round (order of agents is random in this table does not reflect the scores of agents). Our congratulations for the finalists.

#	Team Leader	Team Name	Agent Name	Is OneShot?	Disqualified	Finalist
1	Kazuki Komori	Team May	M5	no	no	no
2	Ito Nobuhiro	Team 137	Lobster	no	no	no
3	Ryoga Miyajima	Team 140	Agent VSC	no	no	yes
4	Atsunaga Sadahiro	Team 150	AgentSDH	no	no	yes
5	Takumu Shimizu	Team 102	RLAgent	yes	no	yes
6	Shiraz Nave	Team 126	AgentSAS	yes	no	yes
7	Amit Dayan	Team 127	PHLA	yes	no	yes
8	Masato Kijima	Team 143	KanbeAgent	yes	no	yes
9	Shota Kimata	Team 144	CCAgent	yes	no	yes

<https://scml.cs.brown.edu/scml>

Registration (Optional) April 1st

Links

[CFP](#)

[TUTORIALS](#)

[VIDEO TUTORIALS](#)

[DOCS](#)

[FAQ](#)

[DESCRIPTION:](#)

[STD/COLLUSION](#) [ONESHOT](#)

[TEMPLATES \(ONESHOT\):](#)

[SYNC \(RECOMMENDED\)](#) [ASYNC](#)

[TEMPLATES \(STANDARD/COLLUSION\):](#)

[MONOLITHIC \(RECOMMENDED\)](#) [COMPONENTS](#)

[DISCUSSIONS:](#)

[STD](#) [COL.](#) [ONESHOT](#)

[SOURCE CODE:](#)

[SCML \(GITHUB\)](#)

[NEGMAS \(GITHUB\)](#)

[SCML VISUALIZER \(GITHUB\)](#)

[SCML AGENTS \(GITHUB\)](#)

[Important Dates \(GMT\)](#)

Online Competition Details

https://scml.cs.brown.edu/scml

2 Tracks (3 in 2023)

56 New registrations (27 in 2023)

77 New agents uploaded (36 in 2023)

Tournaments Run:

- Oneshot: 113 (74 in 2023)
- Standard: 101 (32 in 2023)

Opened for submission December 15th, 2023

Online: Oneshot

Online: Standard

The screenshot shows the SCML 2024 competition website. At the top, there's a navigation bar with links for ANAC, ANL, SCML, and Leader Board. On the right, there are 'Login' and 'Toggle Dark' buttons. Below the navigation, the text 'SCML 2024' is centered. A message states 'Part of the ANAC 2024 Competition @ AAMAS 2024, Auckland'. Two green bars indicate that 'AGENT SUBMISSION IS CLOSED' and 'REPORT SUBMISSION IS CLOSED'. A note below thanks participants and mentions the winners will be announced at the ANAC session @ AAMAS 2024 on May 9, 2024. The page also features a table titled 'SCML: Finalists (Alphabetical Order)' with columns for Leader, Institute, Country, Agent, Team, and Track. The table lists seven entries. To the right of the table is a sidebar with various links: CFP, TUTORIALS, VIDEO TUTORIALS, DOCS, FAQ, DESCRIPTION:, ONESHOT STD, TEMPLATES (ONESHOT), CLASSIC RL, TEMPLATES (STANDARD), CLASSIC, DISCUSSIONS:, STD ONESHOT, SOURCE CODE:, SCML (GITHUB), NEGMAS (GITHUB), SCML VISUALIZER (GITHUB), and SCML AGENTS (GITHUB).

Leader	Institute	Country	Agent	Team	Track
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193	OneShot
Hajime Endo	Tokyo University of Agriculture and Technology	Japan	DistRedistAgent	Team 171	OneShot
Hisakawa Soto	Kyushu University	Japan	SuzukaAgent	Team ABC	OneShot
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousOneShotAgent	Team Miyajima OneShot	OneShot
Yuzuru Kitamura	Tokyo university of agriculture and technology	Japan	EpsilonGreedyAgent	TeamYuzuru	OneShot
GouKazusa	Nagoya Institute of Technology	Japan	PenguinAgent	Team Penguin	Std

Online: Oneshot

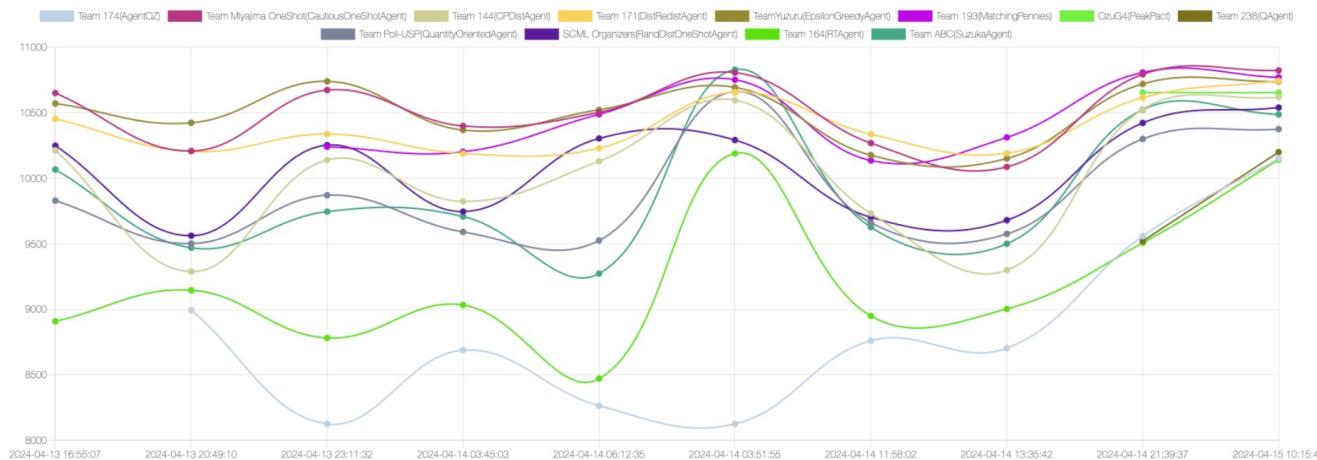
<https://scml.cs.brown.edu/leaderboard>

19 Different Agents

14 Submitted to the official competition

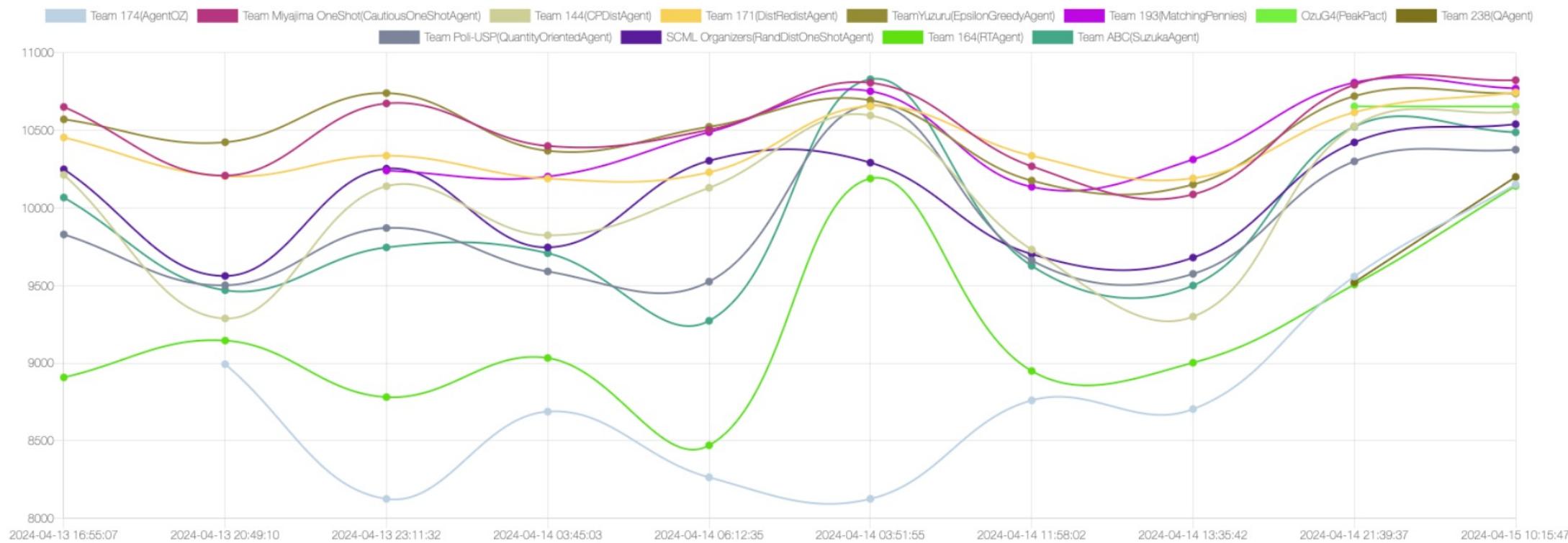
113 tournaments

- Between 1 and 7 hours per tournament



#	Agent	Score
1	CautiousOneShotAgent	10,823
2	MatchingPennies	10,770
3	DistRedistAgent	10,744
4	EpsilonGreedyAgent	10,738
5	PeakPact	10,654
6	CPDistAgent	10,620
7	RandDistOneShotAgent	10,540
8	SuzukaAgent	10,487
9	QuantityOrientedAgent	10,376
10	QAgent	10,200
11	AgentOZ	10,151
12	RTAgent	10,142

Online: Oneshot

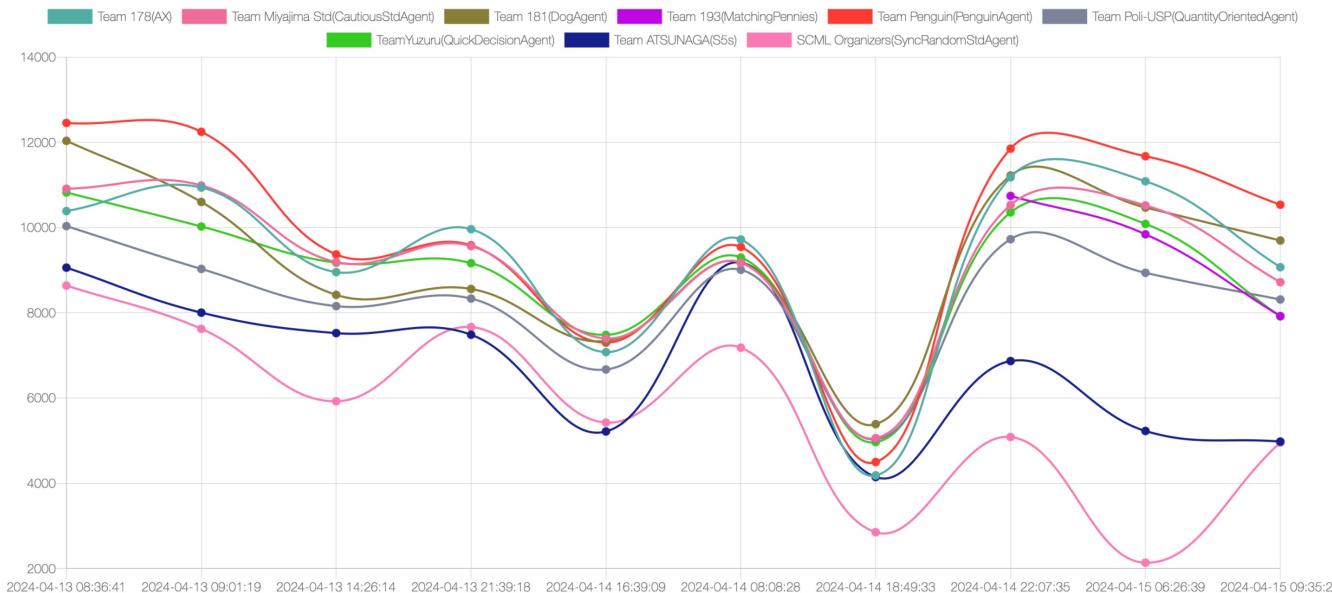


Submitted Agents: Oneshot

Leader	Institute	Country	Agent	Team
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193
Altug Karatas	Ozyegin University	Turkey	Group2	CoyoteTeam
Enes Doruk	Ozyegin University	Turkey	AgentOZ	Team 174
Hajime Endo	Tokyo University of Agriculture and Technology	Japan	DistRedistAgent	Team 171
Hisakawa Soto	Kyushu University	Japan	SuzukaAgent	Team ABC
Kaneko Reita	Nagoya Institute of Technology	Japan	RTAgent	Team 164
Kağan Güngör	Özyegin University	Turkey	QAgent	Team 238
Merve Dogan	Ozyegin University	Turkey	FairT4T	Team 172
Pedro Hrosz Turini	University of São Paulo	Brazil	QuantityOrientedAgent	Team Poli-USP
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousOneShotAgent	Team Miyajima OneShot
Shota Kimata	Nagoya Institute of Technology	Japan	CPDistAgent	Team 144
Yuzuru Kitamura	Tokyo university of agriculture and technology	Japan	EpsilonGreedyAgent	TeamYuzuru
baris	Ozyegin University	Turkey	PeakPact	OzuG4

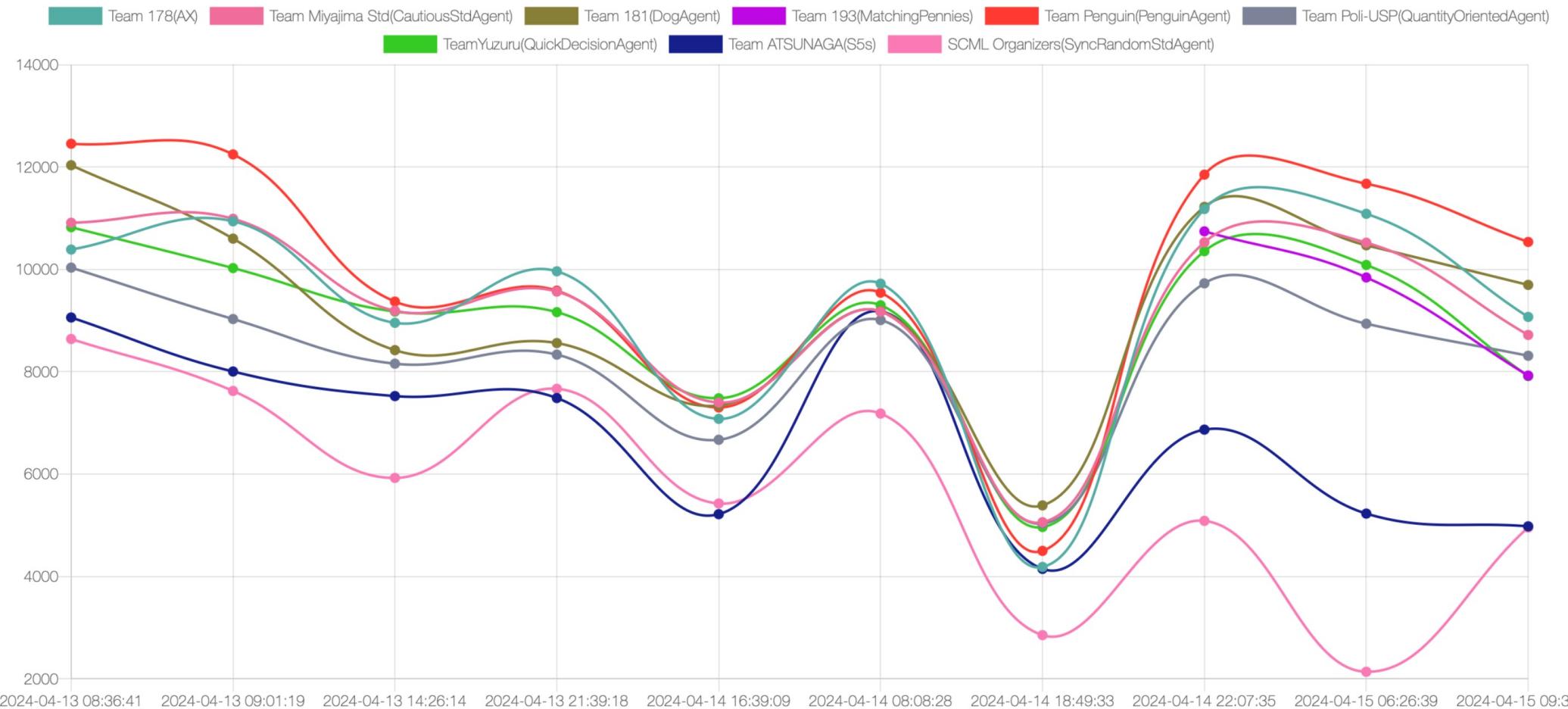
Online: Standard

- https://scml.cs.brown.edu/leaderboard
- 13 Different Strategies
- 09 Submitted to the official competition
- 101 tournaments
 - Between 1 and 7 hours per tournament



#	Agent	Score
1	PenguinAgent	10,535
2	DogAgent	9,696
3	AX	9,071
4	CautiousStdAgent	8,718
5	QuantityOrientedAgent	8,312
6	MatchingPennies	7,924
7	QuickDecisionAgent	7,915
8	S5s	4,979
9	SyncRandomStdAgent	4,957

Online: Standard



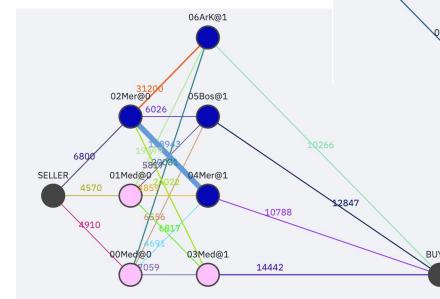
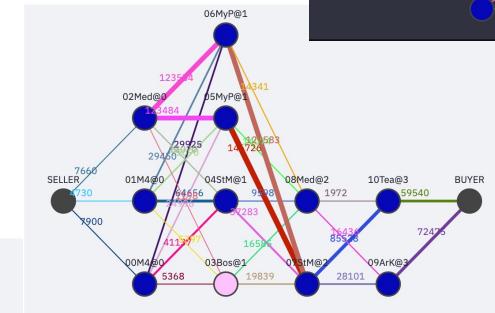
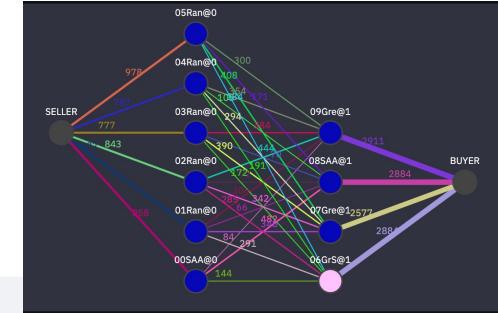
Submitted Agents: Standard

Leader	Institute	Country	Agent	Team
Akash Singirikonda	Brown University	USA	MatchingPennies	Team 193
Altug Karatas	Ozyegin University	Turkey	Group2	CoyoteTeam
Atsunaga Sadahiro	Fujita Katsuhide	Japan	S5s	Team ATSUNAGA
GouKazusa	Nagoya Institute of Technology	Japan	PenguinAgent	Team Penguin
Pedro Hrosz Turini	University of São Paulo	Brazil	QuantityOrientedAgent	Team Poli-USP
Ryoga Miyajima	Tokyo University of Agriculture and Technology	Japan	CautiousStdAgent	Team Miyajima Std
Ryousuke Nakano	Nagoya Institute of Technology	Japan	AX	Team 178
Yuzuru Kitamura	Tokyo university of agriculture and Technology	Japan	QuickDecisionAgent	TeamYuzuru
hamano izumi	Nagoya Institute of Technology	Japan	DogAgent	Team 181

Tournament Procedure

Given K agents [agent = type = class]

- N Configs are generated.
 - Specifies all world parameters up to the class of one set of factory managers
 - Oneshot, Standard → one set = one factory
 - Collusion → one set = three factories
- NK Simulations are run: Every agent is run in each configuration.
- Scores of all agent instances in each world are averaged giving the agent score in that world
- The score of the agent = **truncated mean**
 - Highest 5% of the scores in the top quadrant are removed
 - Risk averse → penalizes occasional negative scores



The same winners result from using the median, mean, and truncated mean.

Qualifications round

Determines qualified agents

- Admission rule:

- Submitted by the deadline
- Has a report and a requirements file
- Nontrivial Strategy

- Progression rule:

- Outperforms last year winner
 - Difference must be statistically significant
- Within the top half of agents

Final Round

Determines winners

- Admission rule:

- Passed the qualification round

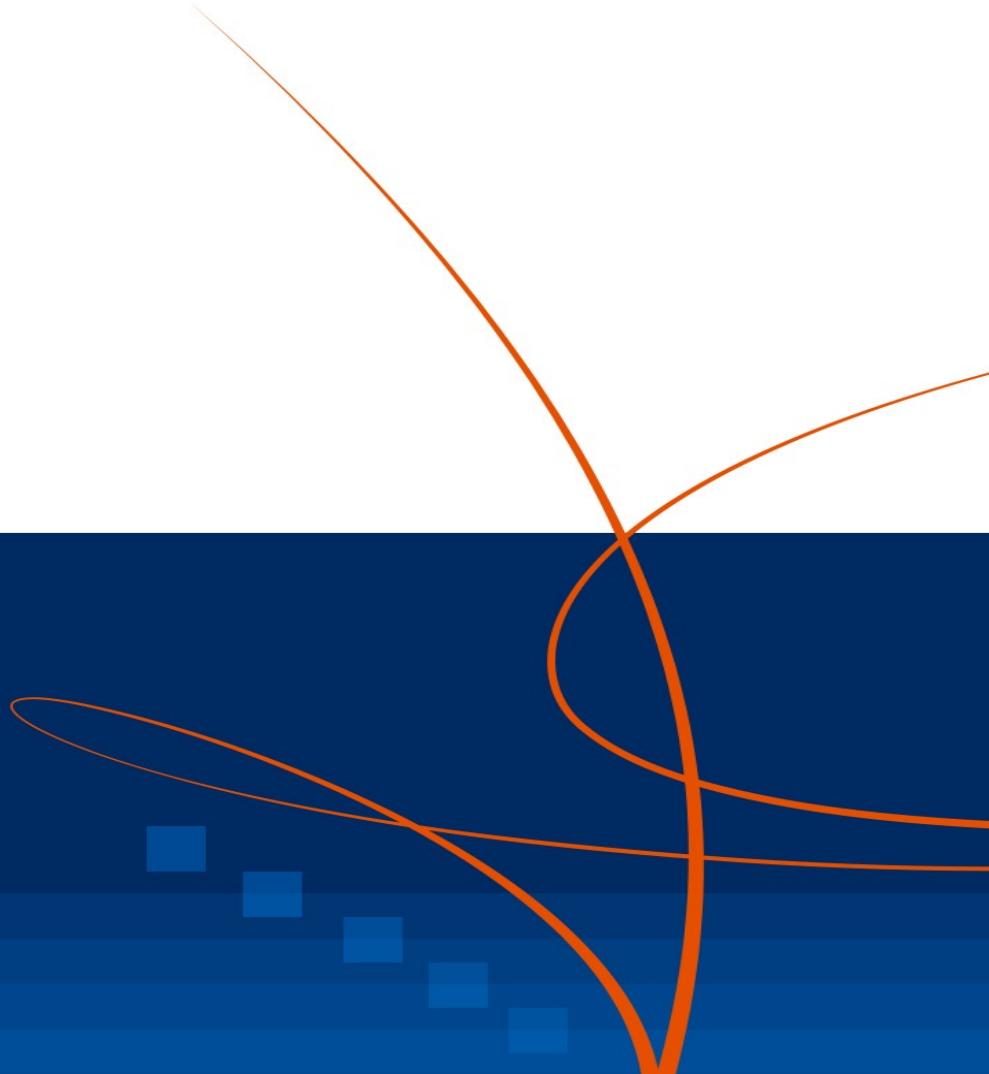
- Progression rule:

- Outperforms all non winners
 - Difference must be statistically significant
- Makes a positive profit

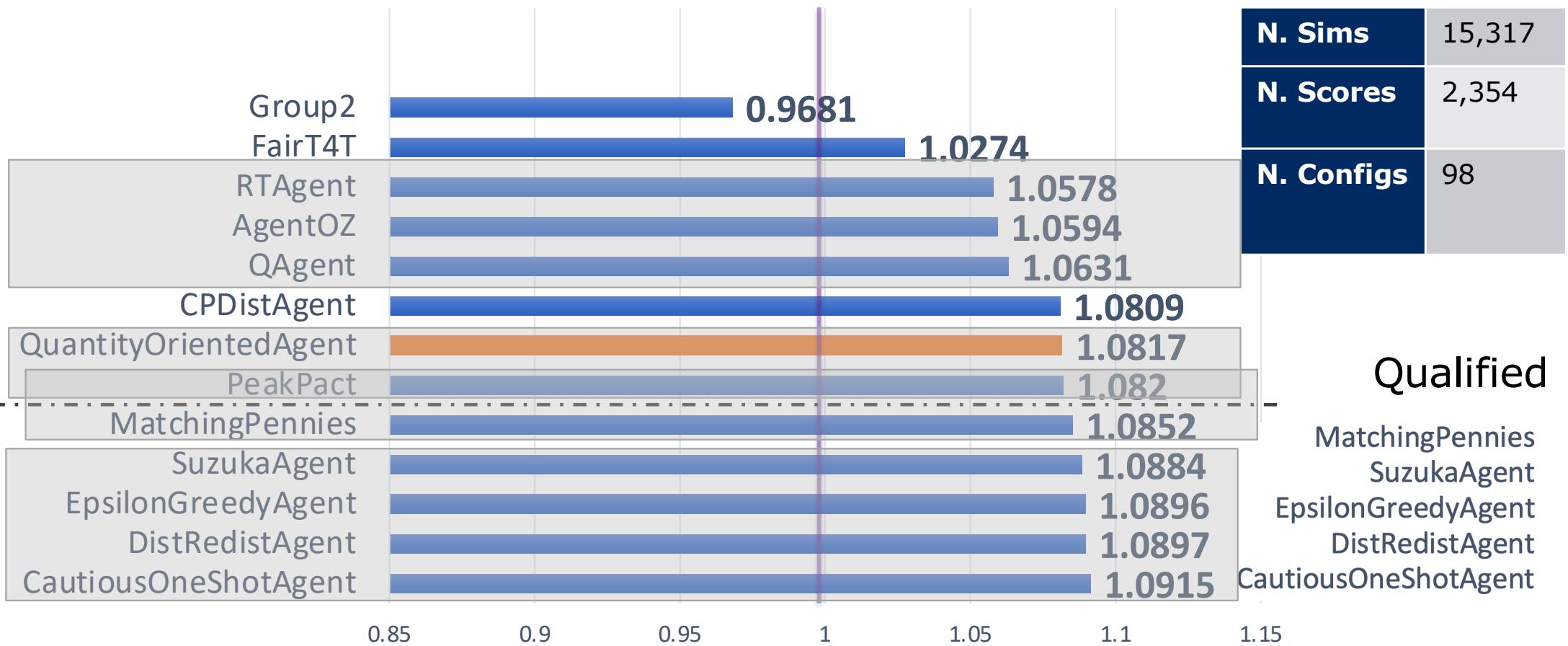
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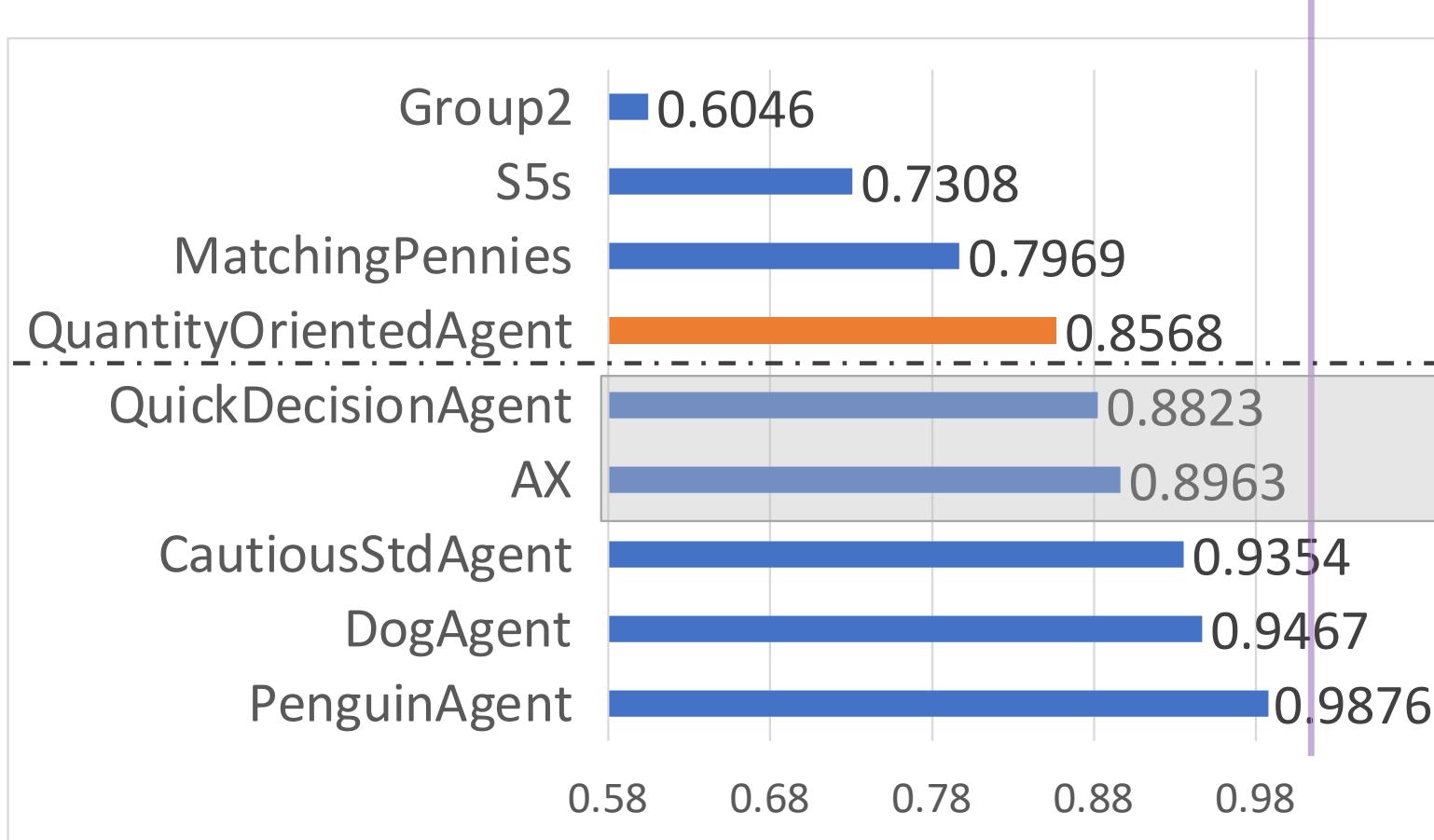
Qualifications



Qualifications Results: Oneshot



Qualifications: Standard



N. Sims	10,278
N. Scores	2,126
N. Configs	159

Qualified

QuickDecisionAgent

AX

CautiousStdAgent

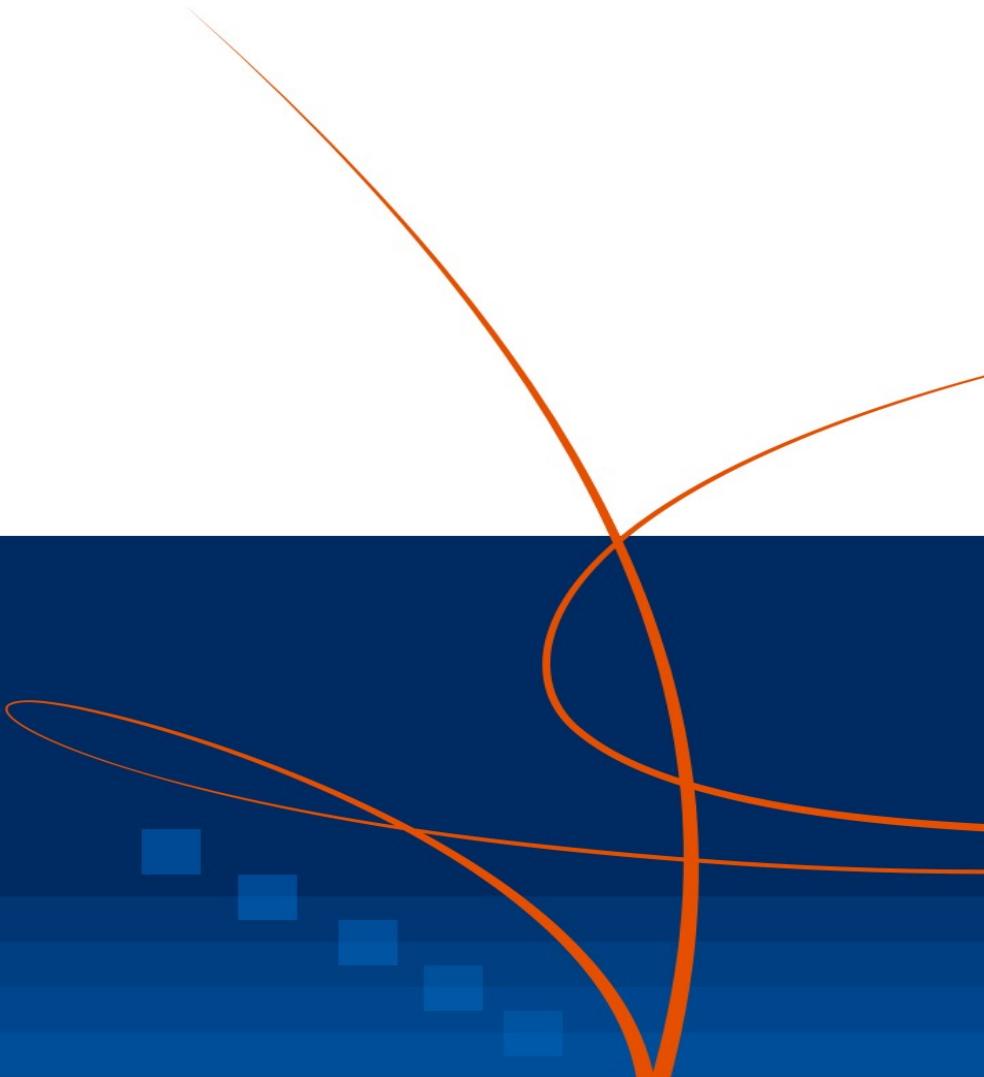
DogAgent

PenguinAgent

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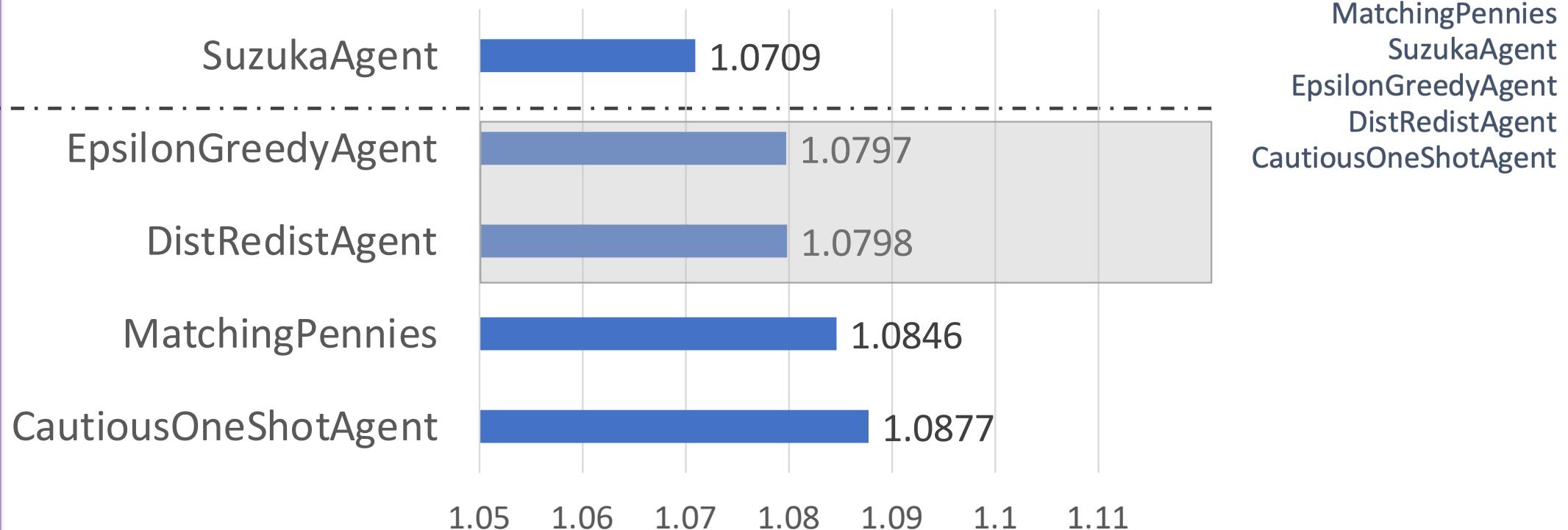
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Finals



Final Results: Oneshot

N. Scores 6,856





WINNER OF THE AUTOMATED NEGOTIATING AGENTS COMPETITION 2024

~SUPPLY CHAIN MANAGEMENT LEAGUE~

(ONE SHOT)

THIS CERTIFICATE IS AWARDED TO

RYOGA MIYAJIMA

TOKYO UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, JAPAN

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

CAUTIOUS ONE SHOT AGENT

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADA

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

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www.elsevier.com/locate/artint



700€

Ryoga Miyajima



Tokyo University of Agriculture and Technology



SECOND PLACE OF THE AUTOMATED NEGOTIATING AGENTS COMPETITION 2024

~SUPPLY CHAIN MANAGEMENT LEAGUE~

(ONE SHOT)

THIS CERTIFICATE IS AWARDED TO

ARNIE HE

BROWN UNIVERSITY, USA

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

MATCHING PENNIES

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADAI

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

CATHOLIJN JONKER

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Research Laboratory



400€

Arnie He
Akash Singirikonda
Amy Greenwald



BROWN

**THIRD PLACE OF THE AUTOMATED NEGOTIATING
AGENTS COMPETITION 2024**

~SUPPLY CHAIN MANAGEMENT LEAGUE~

(ONE SHOT)

THIS CERTIFICATE IS AWARDED TO

HAJIME ENDO

TOKYO UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, JAPAN

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

DIST REDIST AGENT

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADA

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

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**THIRD PLACE OF THE AUTOMATED NEGOTIATING
AGENTS COMPETITION 2024**

~SUPPLY CHAIN MANAGEMENT LEAGUE~

(ONE SHOT)

THIS CERTIFICATE IS AWARDED TO

YUZURU KITAMURA

TOKYO UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, JAPAN

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

EPSILON GREEDY AGENT

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADA

SATOSHI MORINAGA

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Hajime Endo



Tokyo University of Agriculture and Technology

Yusuru Kitamura



Tokyo University of Agriculture and Technology

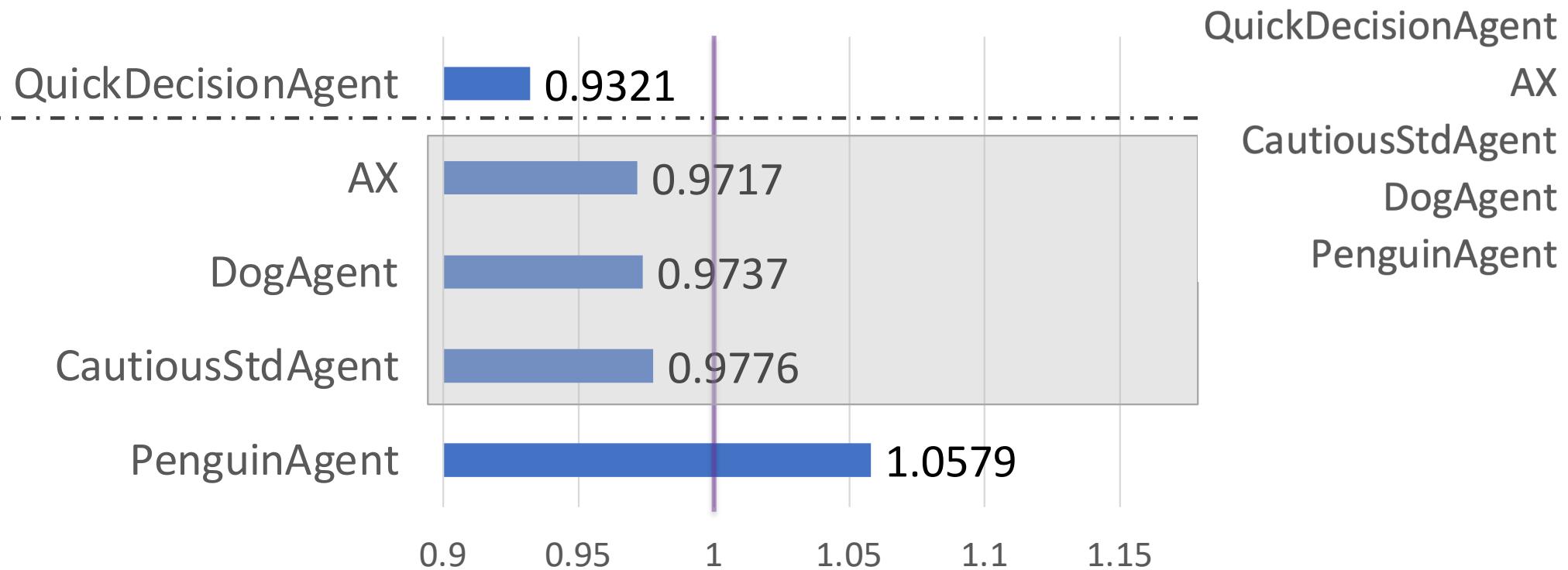
300€



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Final Results: Standard

N. Scores 3,280





Gou Kazusa



WINNER OF THE AUTOMATED NEGOTIATING AGENTS COMPETITION 2024

~SUPPLY CHAIN MANAGEMENT LEAGUE~
(STANDARD)

THIS CERTIFICATE IS AWARDED TO

GOU KAZUSA
NAGOYA INSTITUTE OF TECHNOLOGY, JAPAN

TO HONOR THEIR EXCELLENT NEGOTIATION STRATEGY

PENGUIN AGENT

YASSER MOHAMMAD

AMY GREENWALD

MARK KLEIN

SHINJI NAKADAI

SATOSHI MORINAGA

REYHAN AYDOGAN

KATSUHIDE FUJITA

TIM BAARSLAG

CATHOLIJN JONKER

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700€



Ryoga Hiyajima

Tokyo University of Agriculture and Technology



Hamano Izumi



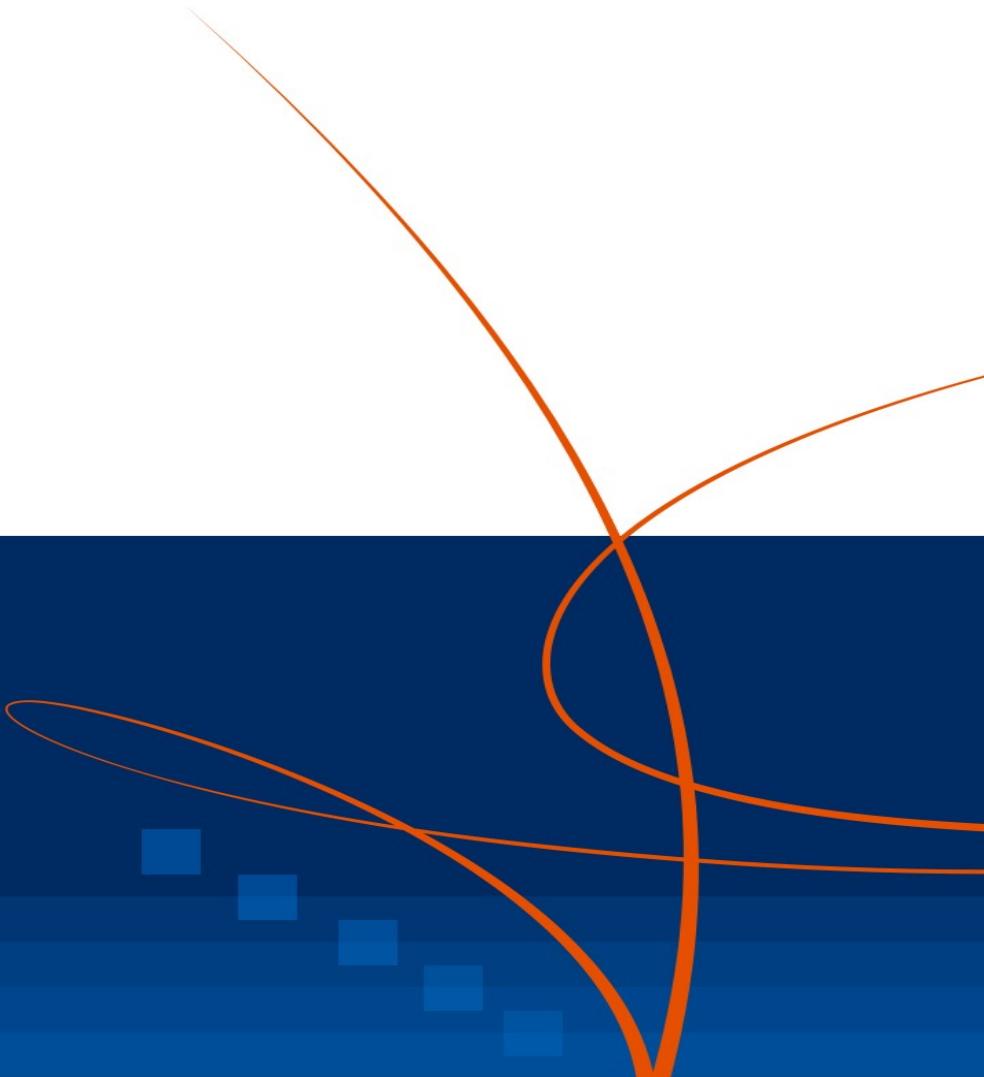

Ryousuke Nakano

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Participant Presentations



Participant Videos

Ryoga Miyajima:

- Winner of Oneshot Track and second place in the standard track

Gou Kazusa:

- Winner of Standard Track

Notes about SCML 2024

Oneshot was successful

- All finalists could improve upon best strategies from last year

Standard was successful

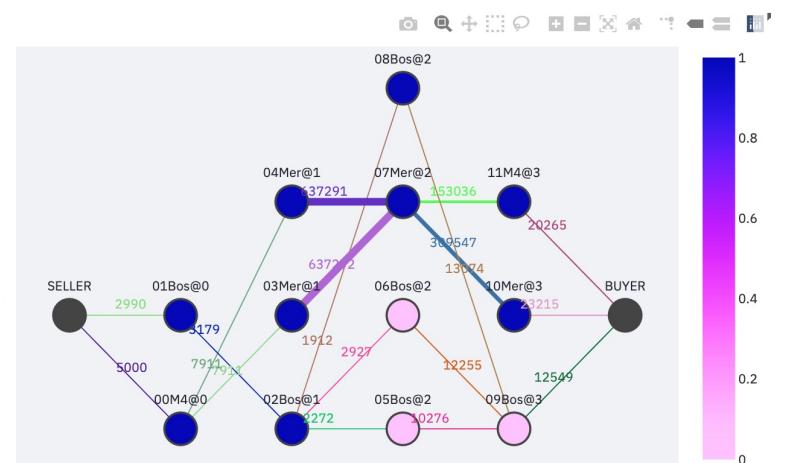
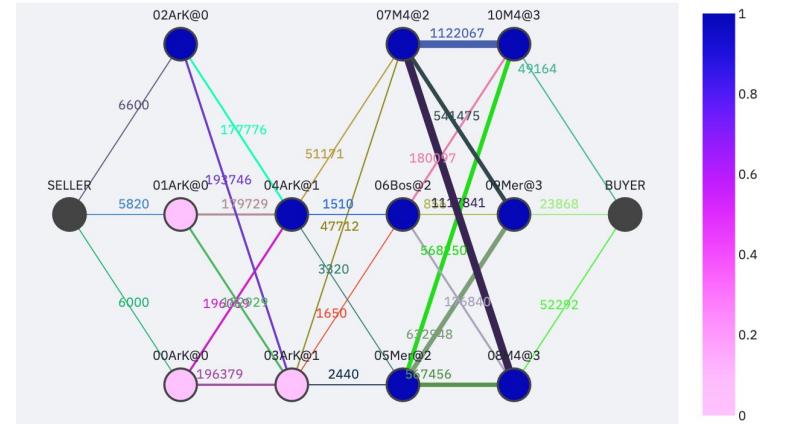
- Number of participants increased by 25%
 - The simpler interface allowed the same agent to run in oneshot and standard

The RL interface

- Used by few agents

Unmodified winners from 2023 were surpassed

- By all finalists in oneshot and standard



Plans for the future

■ No new tracks are being considered

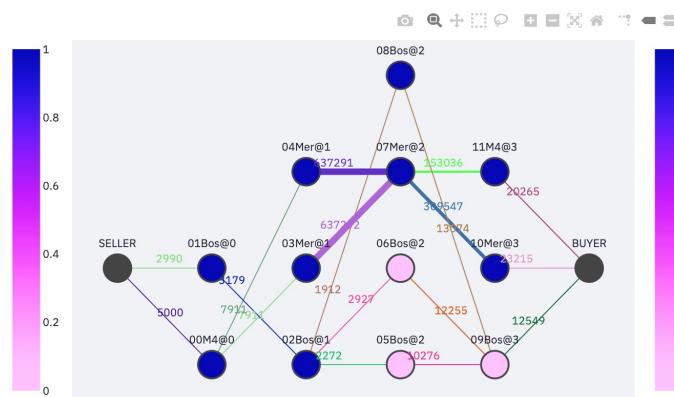
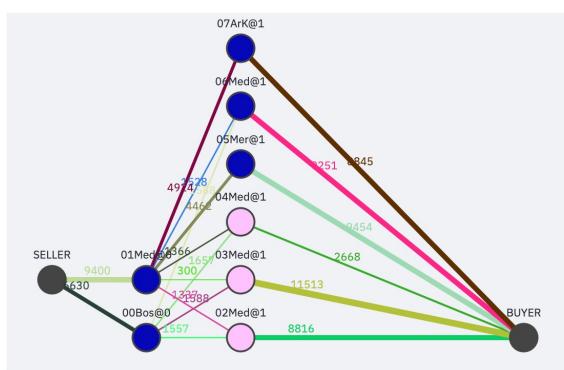
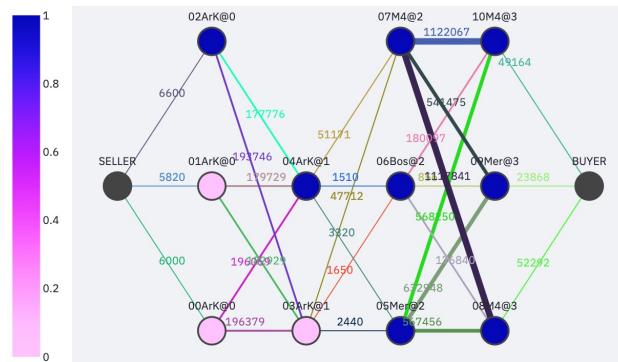
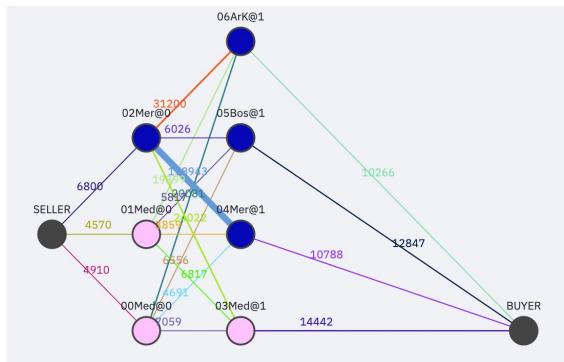
- We are still far from what a benevolent dictator can achieve

■ Oneshot

- Supporting MARL
- Maybe, completely remove the price issue --> Single issue negotiations

■ Standard

- Supporting RL



Thank you

See you next year ☺