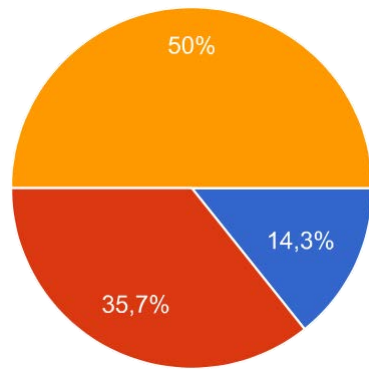


Idea 1 - Add acceptable error % in field marking.



- We are in favor of this idea
- We are against this idea
- We have no opinion on that

Comments idea 1 ?

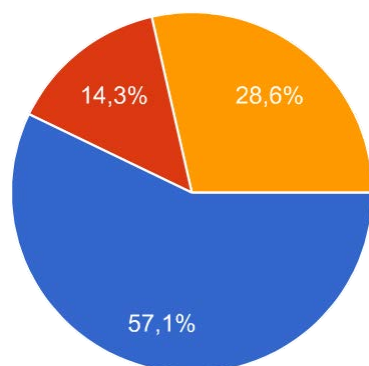
Research/external impact doesn't seem to match effort required

It's already a feature of going to different fields and competitions

Everybody is going to measure anyway

Allowing errors if they happen by accident on events would be fine, but intentionally randomizing field dimensions is not useful in our opinion

Idea 2 - Add visual signal in game. The idea would be to replace/delay current signal from the GameController. The visual signal could be triggered by the whistle. Penalty Should be excluded from this.



- We are in favor of IN game signal (such kick-in, goal kick, etc)
- We are in favor of having the referee standing at random location around the field for ready signal
- We are against this idea
- We have no opinion on that

Comments idea 2 ?

We are in favor of an in game signal as long as it is from a set position (like the t junction).

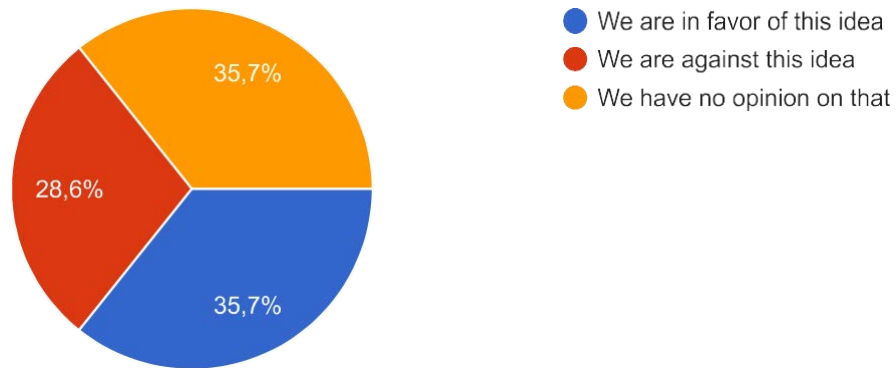
This doesn't improve soccer gameplay, but will likely make gameplay a lot worse across all leagues at the present time.

Limit the position of the referee to positions that are not giving a disadvantage to one team, meaning, most robots in stand-by state should be able to see the referee (not in a corner, not behind a goal post, etc)

Against more vision challenges until platform has improved compute power.

A scored goal might be a potential candidate for this because it is already delayed by the GC

Idea 3 - Discard motion in Set. All robots are allowed to move until ball is placed.



Comments idea 3 ?

Remove the SET state.

Set is necessary for the humans running the game against unpredictable robots. It will lead to issues in the challenge shield

Not until ball is placed, but always (just like in real soccer)

Illegal position/leaving the field should be taken into account before the ball is free.

Pro: more like real soccer

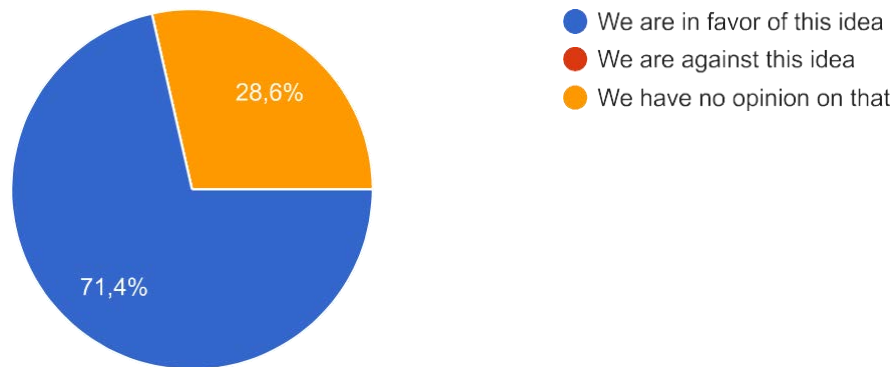
Con: harder for referees to settle the start of the game, less oversight

As discussed at team leader meeting, this would mostly make the referee's job harder / more chaotic.

Also with current rules, this would further disincentivize teams from acting on referee gesture, since SET state can be used to continue walking in.

Makes refereeing harder.

Idea 4 - Audio output to audience of referee Decisions like in SSL

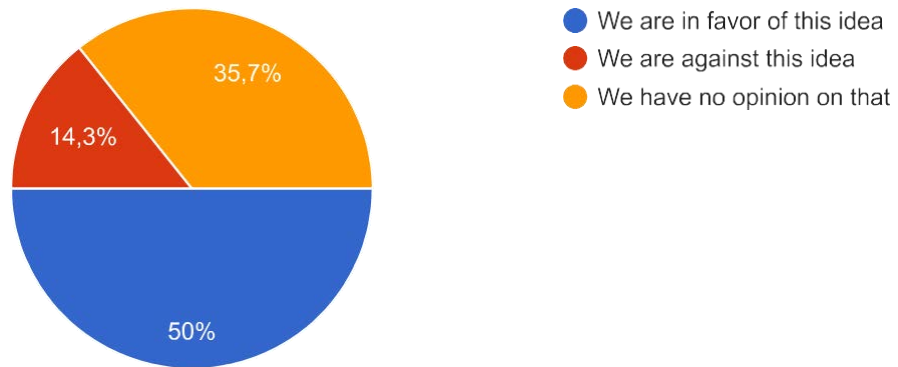


Comments idea 4 ?

This is a GC matter, not a rules matter.

Good also to spare the GC operator a few shouts, not just for the audience

Idea 5 - Auto referee together with online game statistics



Comments idea 5 ?

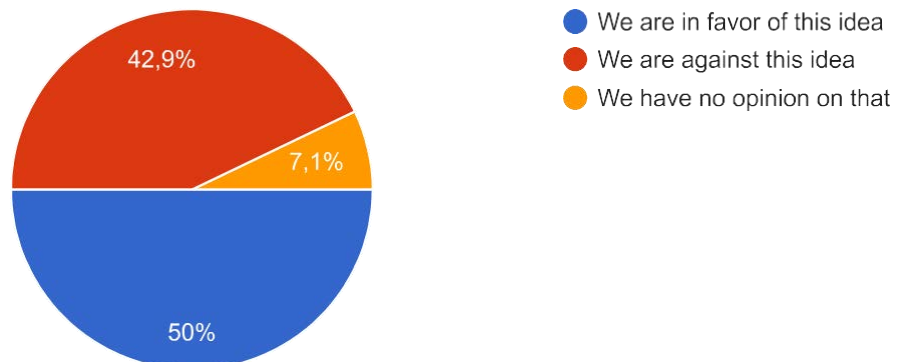
Who implements this? As the enthusiasm for technical challenges is not very high, we would expect that it would not work to implement this idea as a community effort.

We think an important human-aspect present in actual soccer would be lost with auto-referee. However, we would like the online game statistics nonetheless

But in favor of more statistics!

We would need to know the accuracy of the system before we are able to judge if it should be used. A test phase should be running in parallel to human refs.

Idea 6 - In playoff: time extension in draw



Comments idea 6 ?

I think audiences find the penalty shootout more interesting

If yes, then with Golden Goal.

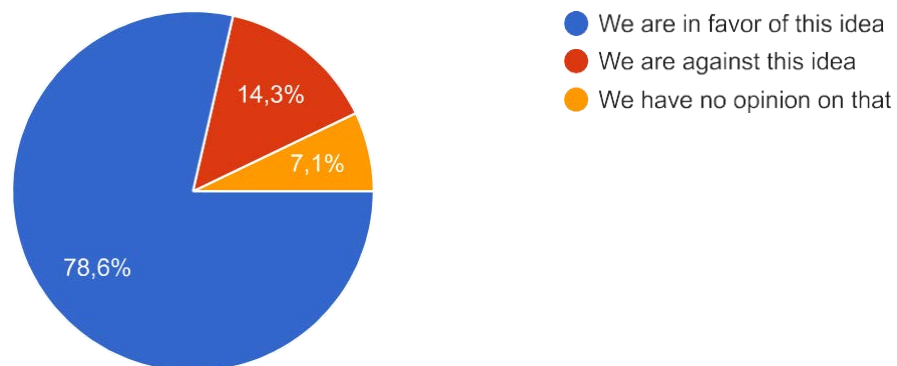
It's a reasonable idea, but practically has scheduling issues. Few games end in a draw at the moment.

We think aspects like battery would be an issue if it was applied, also if there's a draw even after the extra time, the penalties and battery would be an even bigger issue

Makes scheduling hard/worse

Playoff games should be few enough that scheduling is less of an issue. In principle, as the league evolves, a time extension is more in line with the RoboCup's ultimate goal, while penalty shootouts should be kept as a last resort.

Idea 7 - End the match not when time is over end it if the ball stops outside the penalty area. So, attack situation is finished



Comments idea 7 ?

In general, we agree, but only if the ball is still moving or a penalty kick is still in progress.

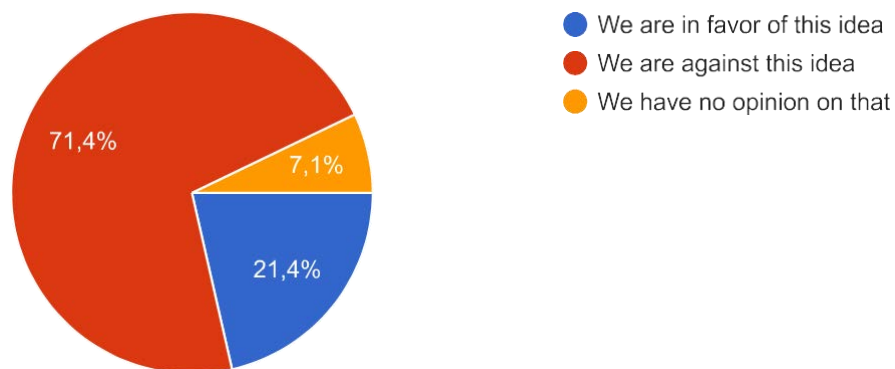
Determine what is an ending action clearly for referee

There should be a profound revision of rules to define really well what's a dangerous situation and it should be added in rules, also, this should be left to the decision of the head referee (no autoreferee)

There are a few corner cases that should be also defined e.g.:

- global game stuck
- no visible progress (e.g. goal kick loop due to no indirect goal)

Idea 8 - Larger field /joint fields (2 smaller in one bigger)



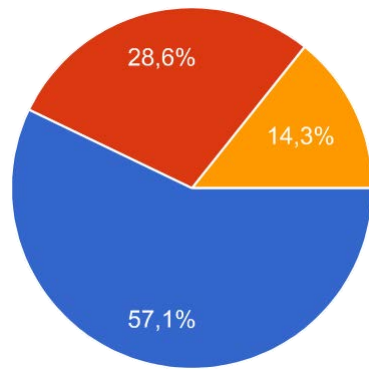
Comments idea 8 ?

For the NAO, the field is big enough. Combining two fields is difficult because of the field lines.

There will be a greater energetic consumption, we think nao's are still pretty slow so a great aspect of the show of the SPL would be lost.

This would basically be impossible to test outside of competitions, since we do not have any space where we could put a joint field.

Idea 9 - Full opensource



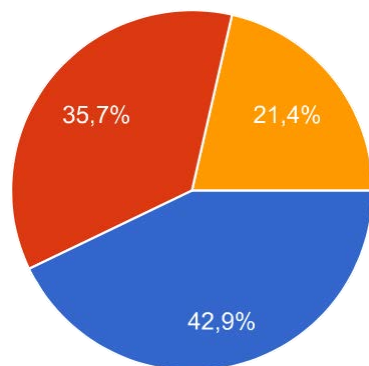
- We are in favor of this idea
- We are against this idea
- We have no opinion on that

Comments idea 9 ?

pleeeeeeaaassee

Short term

Idea 10 - Introduce a pause button to stop robots in a pause of a game in a extreme situation to detangle.



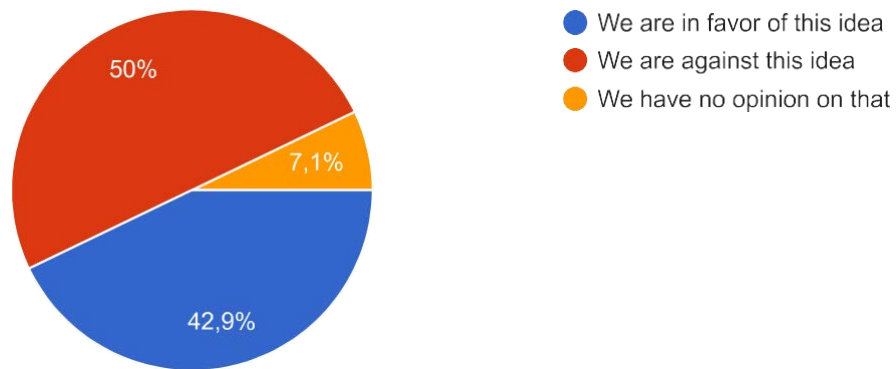
- We are in favor of this idea
- We are against this idea
- We have no opinion on that

Idea 10 - Comments ?

This is difficult to define and implement while keeping fairness to both sides for an edge case problem. It's best to just separate the robots.

Should not be used too excessively as it also destroys the flow of the game.

Idea 11 - More in game challenges like longest pass chain



Comments idea 11 ?

Conflicting goal between winning the games and winning the challenge.

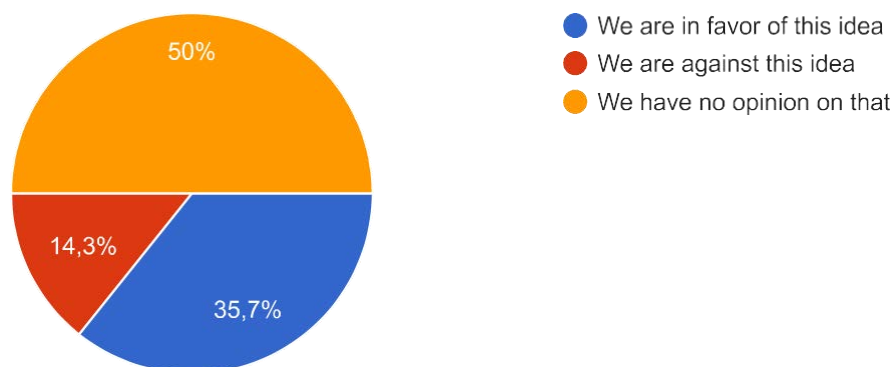
The league needs other ways to encourage improvements outside of winning the competition.

Challenges should contribute to the league missions

In our opinion, in-game challenges have always had the conflict of risking the (more important) game in order to win the (less important) challenge, as noted in the HedgeDoc too.

Separate scoring

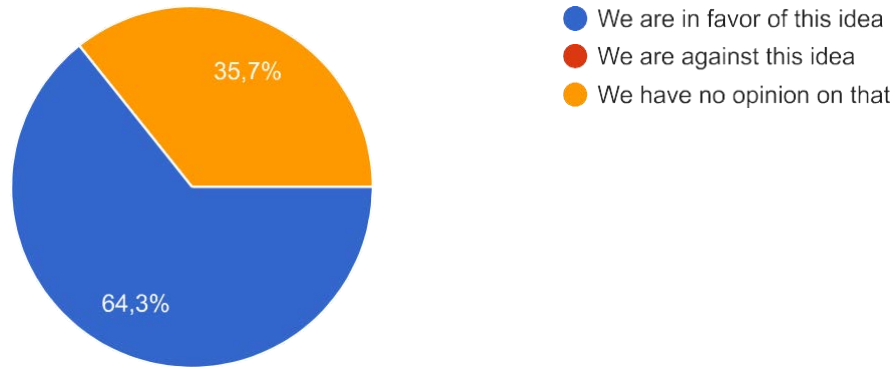
Idea 12 - Go back to open technical challenge



Comments idea 12 ?

If this is coupled with alternative ways to rank teams across every aspect of SPL, to give other avenues of "winning" outside of "winning your league"

Idea 13 - Best referee voting



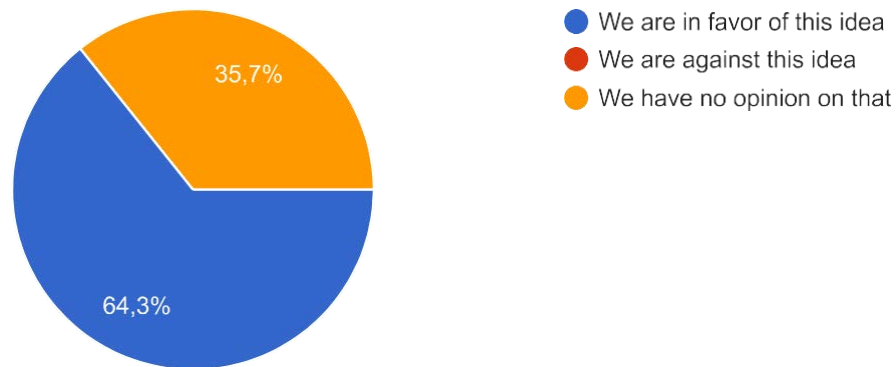
Idea - Comments ?

If this is coupled with alternative ways to rank teams across every aspect of SPL, to give other avenues of "winning" outside of "winning your league"

Teams should receive feedback on their refereeing, maybe not public, but anonymized

Our veteran team leader (not the person writing these comments) mentioned something like this used to exist around 7-8 years ago. Maybe the discussion could start from there?

Idea 14 - NAO skill competition, for example fastest robot, best vision, longest kick, best whistle detection, most precise kick, obstacle course, like a mini NAO Olympic



Comments idea 14 ?

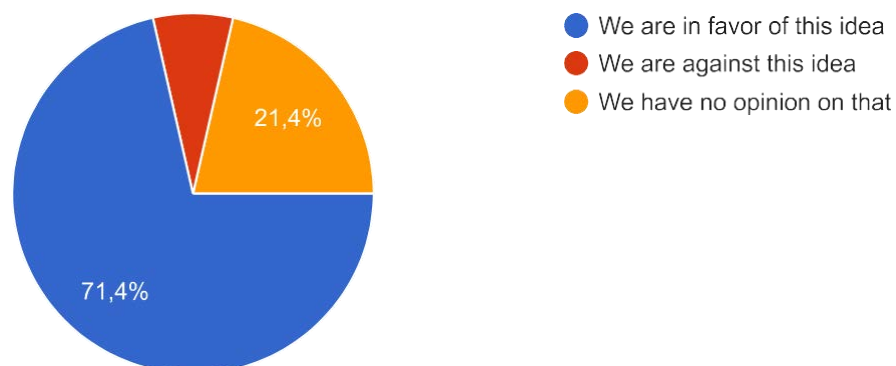
Some of these 'skills' are very dependent on hardware, which would make it almost pay-to-win.

If yes, then as technical challenges that are designed in a way that they have an actual benefit for the games.

As far as it's open source, it can help to contribute to the league mission, also it would be nicer for spectators to look

Only as an out-of-game challenge (which this proposal seems to imply anyway). It might take time to schedule so many different trials, though.

Idea 15 - Referee practice matches to allow new referees to gain experience, like in the friendly games during the set up days



Comments idea 15 ?

The referee training should just be done at competition, not online before hand.

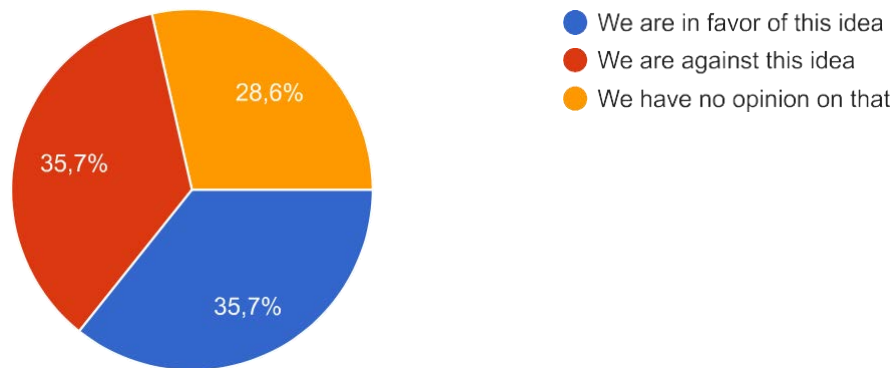
Should be the responsibility of each team

In teams like ours, the team is fresh between competitions and rule book isn't enough to gain the necessary experience for being a good referee

This should be strongly encouraged (many teams already do that), but we don't think it's necessary to codify this in the rules.

A general announcement during the first team leader meeting and some organizational help, such as a discord channel for coordination would probably suffice

Idea 16 - Scientific challenge: Teams present research contributions and a panel judges their significance to the broader robotics community.



Comments idea 16 ?

That's what the Symposium is for.

If this is coupled with alternative ways to rank teams across every aspect of SPL, to give other avenues of "winning" outside of "winning your league"

Maybe in form of a dedicated session for presenting the contribution posters (without judging)

As we are a small team, we wouldn't be able to make greater contributions to a wider community

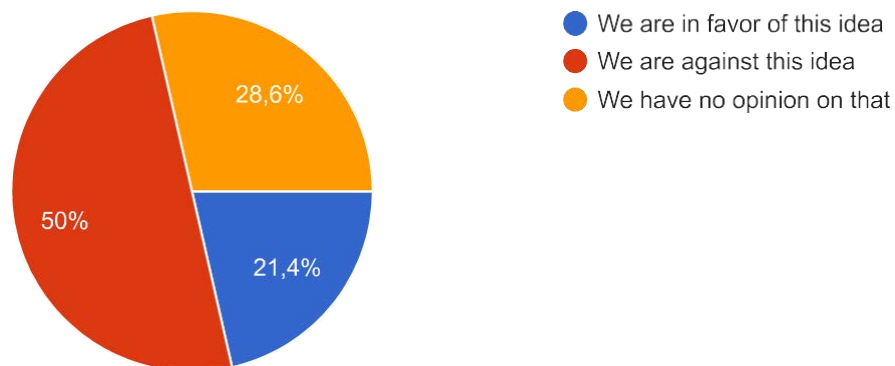
Thats the idea of the symposium?

second symposium???

Whats the difference to Open Research Challenge/Symposium?

be aware of tight schedules

Idea 17 - Variable field size. A different color tape could be used in this challenge to temporarily lay down new field lines. The idea would be to have a functioning soccer player with less prior specification of the field



Comments idea 17 ?

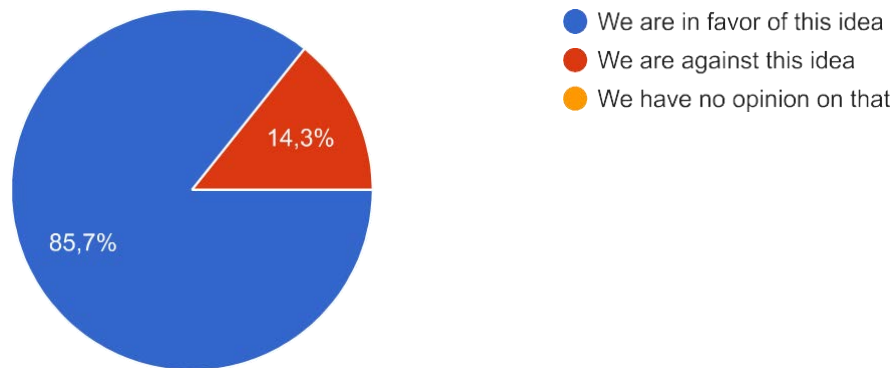
See also RoboEireann suggestion. Care is needed with different colour tapes as many colours wash out to white in the robot cameras.

This doesn't overall improve soccer play. It only seems to be an issue for practicality of available field space, which doesn't seem to be a problem we need to address now.

Only if teams are not allowed to measure the new field dimensions

Fields are standard in any real soccer game

Idea 18 - Communicating the feedback gathered from the referee feedback form, though they might need to be anonymized first.

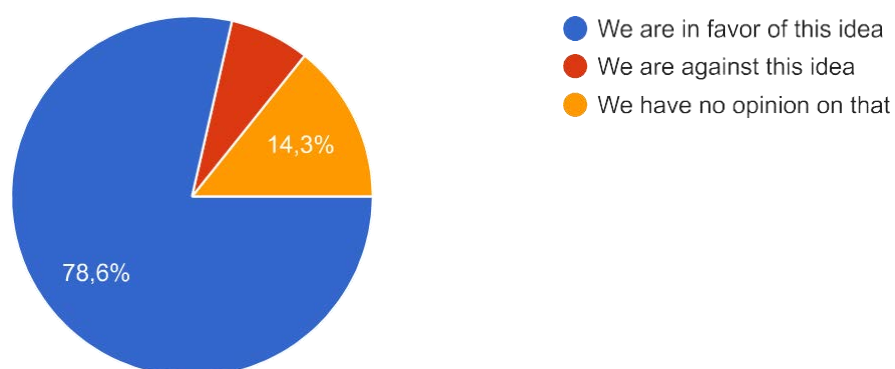


Comments idea 18 ?

Mainly to report most common mistakes made etc. rather than individualised feedback

Maybe not anonymized, but as a feedback directly to the teams.

Idea 19 - Expanding on “ref practice matches”: maybe set up an “open refereeing” system during the setup days, where future plans for friendly games are openly published, and any ref in need of training may claim referee duty for any game? I understand this may require some extra planning and that everyone’s opinions on the matter should be considered, though.



Comments idea 19 ?

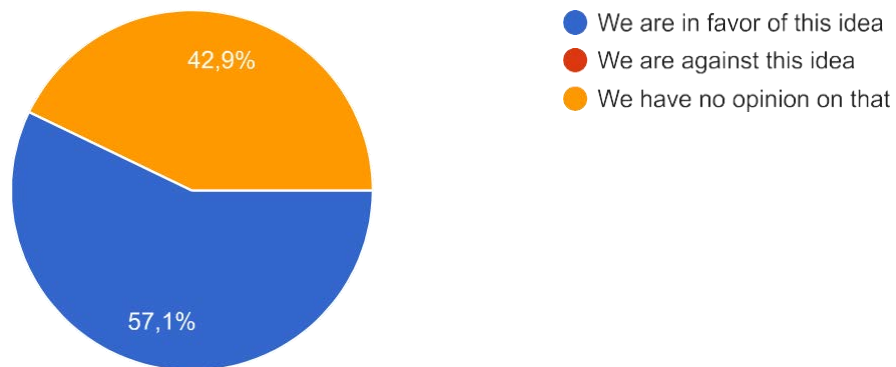
We like this idea, but referees should speak to playing teams and ask if they can referee their test matches. Test matches are different to normal games (special rules, teams interfering, ...)

Friendly matches should never be forced but we like the idea.

see #15

Short Term

Idea 20 - Technical Challenge: Kicking a rolling ball. Roll the ball down a ramp towards the robot and the robot must then kick the ball into the goal. The direction the ball rolls can be varied slightly throughout different runs of the challenge, so the robot has to move slightly before it can hit the ball

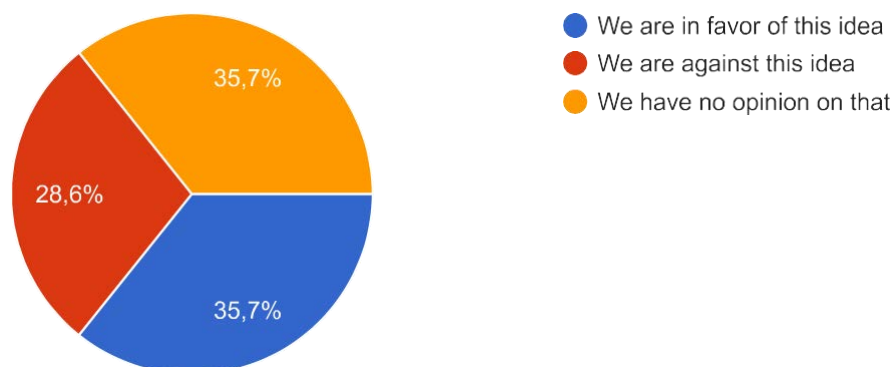


Comments idea 20 ?

The humanoid league has done this. Are our robot's fast enough?

From our experience: a ball rolling down a ramp has a wildly unpredictable path on the current field.

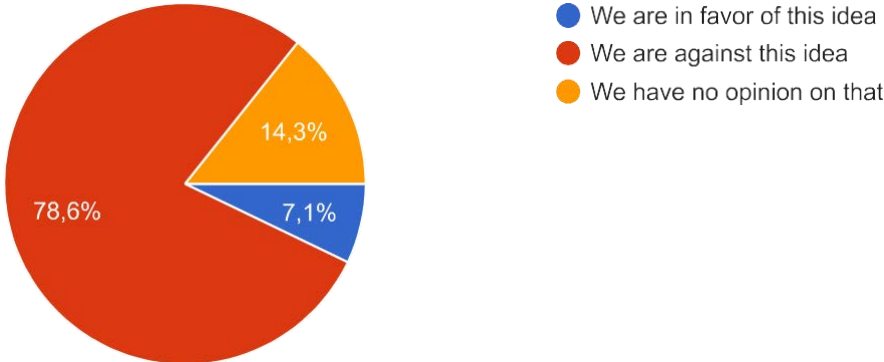
Idea 21 - Technical Challenge: localization from off-field landmarks. A robot is put in a known position and given 1 minute to walk around as it wants. After that, it is picked up and put in a random position and must figure out how to score in the correct goal. The idea would be that the robot can solve by identifying off-field landmarks and using to localize.



Comments idea 21?

Hard to execute in practice at the venue. We'd need even more "blank" field carpet.

idea 22 - Technical Challenge :
continuing SAC, but replace human operator with some form of AI



Comments idea 22 ?

The SAC purpose was to test collaboration with humans - this is the interesting research area. The rules would need work so that teams don't just use their debug tools and low level remote control.

Absolutely not. The SAC does not match at all with the goals of our league.

The point of the SAC is to work with humans, not another AI

!?!?!11??? Isn't this what we do in a normal game with 7 robots already?

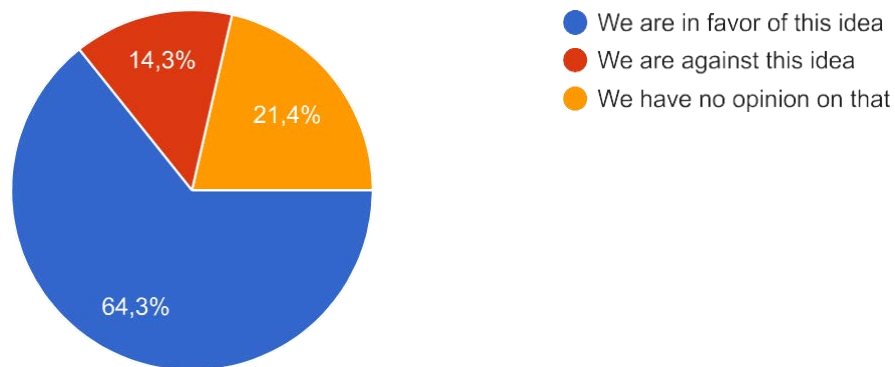
We are in favor of continuing SAC, but replacing human operator with AI contradicts the challenge.
As alternative we would suggest using a higher level interface for human operator and make is basically a strategy game against an autonomous team, where human operator decides on plays & strategy.

Not sure how this is different than the normal competition

We would like a SAC continuation with human operators.

it would be helpful to use external cameras as sensors, too

Idea 23 - Drop-ball rule to restart a game in the event of a ref error or pause to resume the game fairly



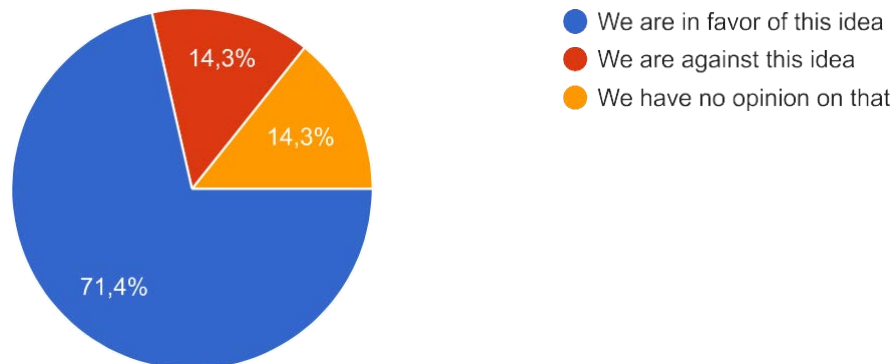
Comments idea 23 ?

Not necessarily drop ball, but some rule would be nice

There are many referee errors, in the current state of league it would just make the game less fluid.

No idea what a "drop-ball rule" would be, but general guidance / recommendations on how to deal with referee errors would be good.

Idea 24 - A common log file format for all sensor, camera, and game controller data recorded by robots during the game. (This does not have to be the native logging format of the team as each team could have a tool to produce the common format.) The objective would be to make it easy to create a repository of log files and facilitate log file exchange for machine learning and other tasks.



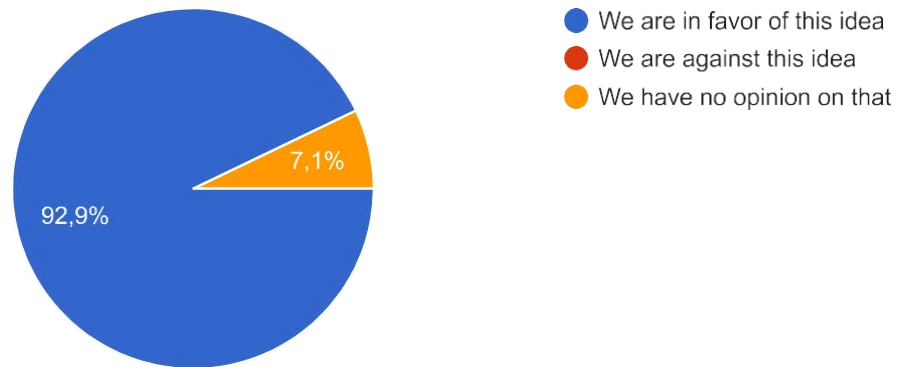
Comments idea 24 ?

Will not happen anyway.

all camera images would be a lot though. All teams must record and publish their logs

This must be extensible with additional team-specific data.

Idea 25 - An option to exit a penalty immediately after being placed on the sideline (without the 45 sec or longer delay) in case a robot was penalized in error by the referee/game controller. This reduces the cost of such referee errors.



Comments idea 25 ?

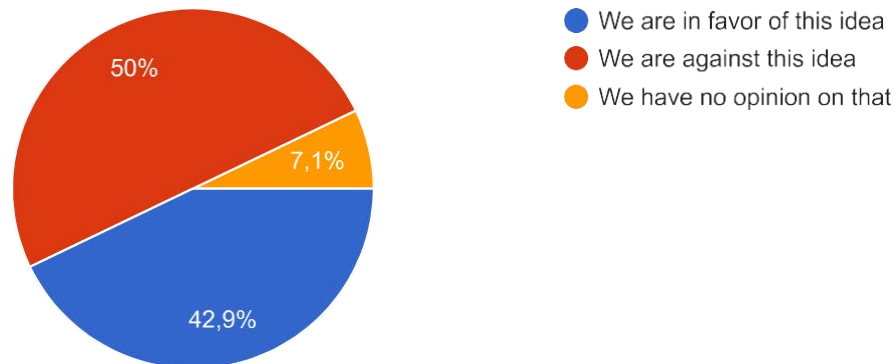
You can already revert referee decisions and robots can detect that a referee is reverted if this happens quickly.

If the robot was not moved by a referee, unpenalizing in place would be even better

In general it would be good to revert a penalty (because with the undo button it is currently only possible if it was the last action)

Of all the proposed solutions to fixing referee errors, this is the one we like the most. It mitigates the consequences of the mistake, while avoiding additional disruption to the game. It is not a perfect solution, but an excellent compromise.

Idea 26 - Technical Challenge: "Extreme Lighting". Play in adverse conditions such as late afternoon at the outdoor field (bright grazing light) or strong flashes pointed at the field. Additionally or alternatively, may be extended to other adverse conditions such as field slope.



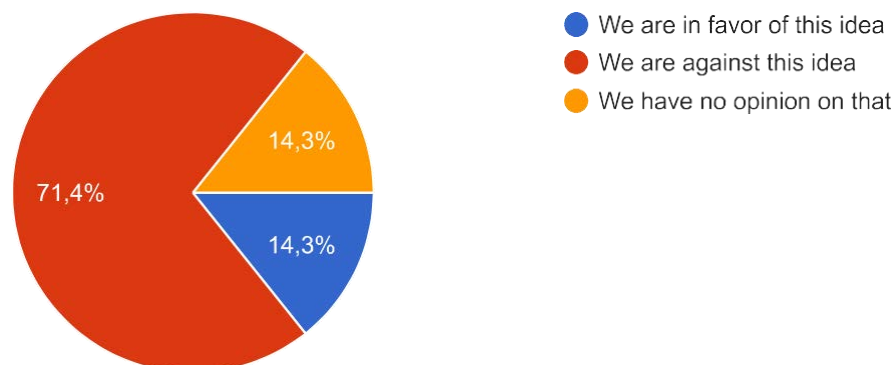
Comments idea 26 ?

There are hardware limitations.

An interesting idea, but unreliable to execute at competition where we don't have control over the "outdoor" field that we get.

We're in favor of extreme lighting but we don't think there should be extreme adverse field conditions

Idea 27 - Robots respond to audio (speech) signals from the game controller for selected game situations. (Using the game controller computer speech bypasses issues around different speakers for now).



Comments idea 27 ?

I cannot hear the referee when further away during a competition. How should the robots accomplish this?

Audio is terrible in a competition venue. Please consider that most teams had problems hearing the hand whistle this year! Most referees reverted to a very loud blown whistle. Background noise is very problematic in a wide venue. The @home leagues which are the testbed for audio inputs struggle every single year with audio, and they have much better microphones and processing than the Nao. This year, it was almost impossible on competition days in the @home leagues to hear audio input. Further, consider most human people at the year's competition couldn't hear the human referee calls, with the exception of a very few loud referees. This just doesn't work in practice.

There's always too much noise to be trying to make the robots listen to actual orders.

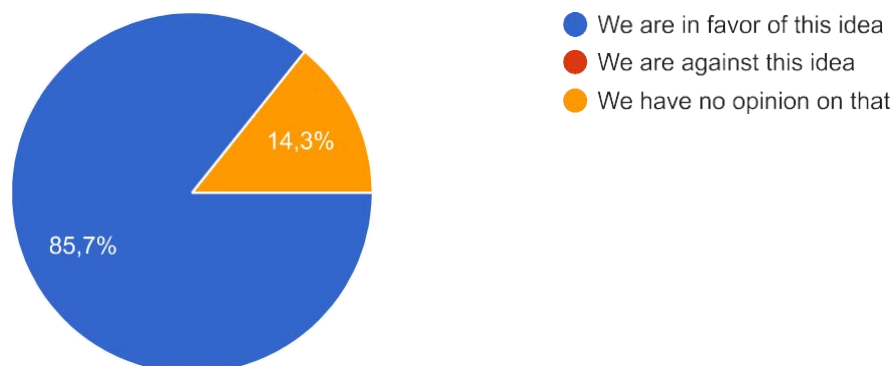
Impractical with audience noise, esp. during final games.

Pros: Interesting idea for a technical challenge. It does not correlate directly to human soccer (referees don't make calls with their voice, so players don't have to recognize them), but it might encourage the teams to develop advanced audio techniques that could be used in other situations, such as non-wifi communication.

Cons: Many practical problems, including audience noise and a higher chance to disturb nearby games.

In any case, we approve of the idea of using a standard voice synth instead of the referee's voice.

Idea 28 - Permit (a limited) number of wireless monitoring devices to be on the field networks. These may be passive devices that may listen to GC packets but not transmit.

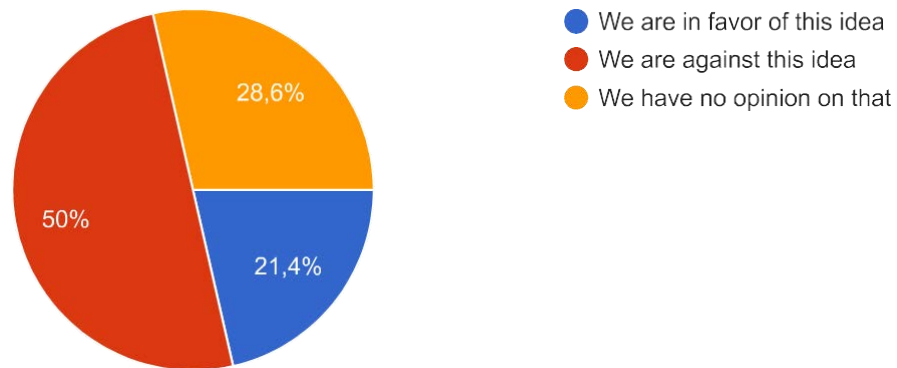


Comments idea 28 ?

Isn't this allowed already? (TeamComm)

Long Term Advancements

Idea 29 - Use yellow/red card to indicate pushing



Comments idea 29 ?

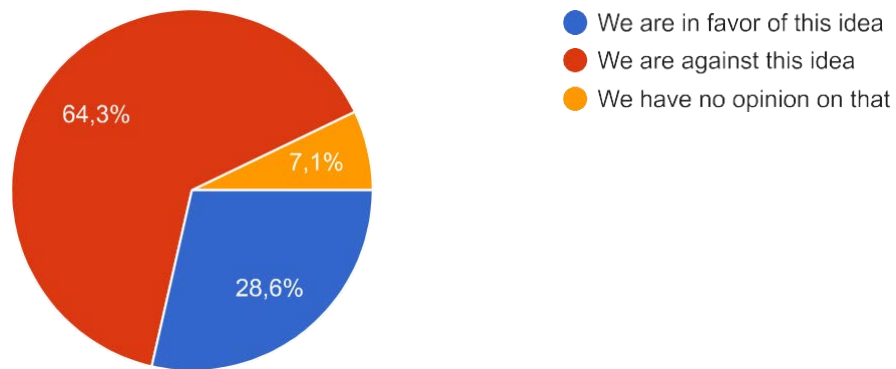
Too slow to implement in practice.

Should robots detect it? Also it's way more difficult for head referee and what yellow or red stand for.

Makes only sense with the pause button/state.

what happens after the second card

Idea 30 - NAO Hardware extension, computing backpack



Comments idea 30 ?

Depending on how well the extension is secured, it could increase the workload of the assistant refs if the extension was to fall off during a game.

Use the same hardware for all teams. NAO is already heavy enough.

The purpose is to use standard hardware. If you want this, go to the humanoid league.

It would be interesting in a challenge to see the actual boundaries of a Nao, but it could be bad for actual competition since could put some teams ahead.

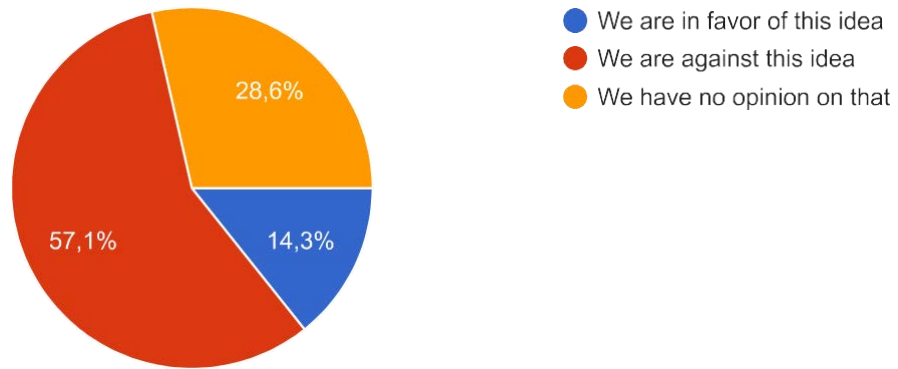
probably unnecessary with V7 already being announced and hard to make robust & standardized

Lack of computing power is a major downside of our league.

Not so close to v7 release. Let's postpone this discussion to after we've had a couple years to play with it.

limited to standard gadgets

Idea 31 - TC: discard more and more field marks



Comments idea 31 ?

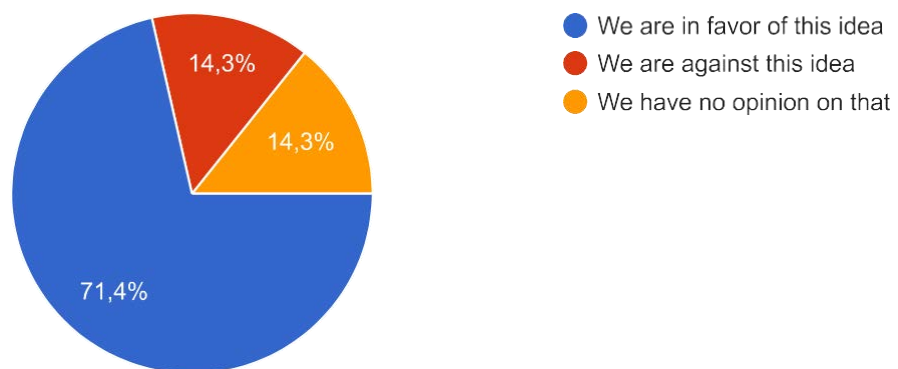
Goal is to play according to the FIFA rules. There are field lines in that rulebook. Therefore, this challenge would not advance the league.

The purpose is to move towards 2050 with FIFA field marks, not get rid of them. If anything we should be adding the correct field markings.

Real football fields have marks, there's no reason to take them away

There are no SPL field marks that are not found on a human soccer field, so why?

Idea 32 - Align leagues to allow interoperability of code and share platform and knowledge

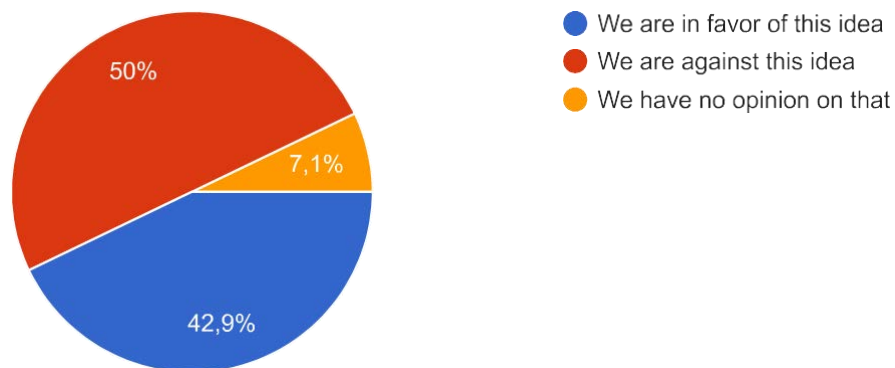


Comments idea 32 ?

Leagues already share knowledge by publishing papers.

Current leagues hardware aren't that alike, we think it would be an issue to abstract most of the current Nao features to make it interoperable

Idea 33 - To be in CC you have to be able to beat the 1st, 2nd or 3rd of RC 3 years before



Comments idea 33 ?

The rules changes each year so it is awkward to do it exactly like this. It may also create too high a barrier. Can it be adapted with a lower barrier?

Make the Champions Cup smaller and the Challenge Shield bigger. However, there are practical issues when playing against old code, because the rules change.

How many teams can actually do this consistently? You'd end up with 75% of the teams in the challenge shield.

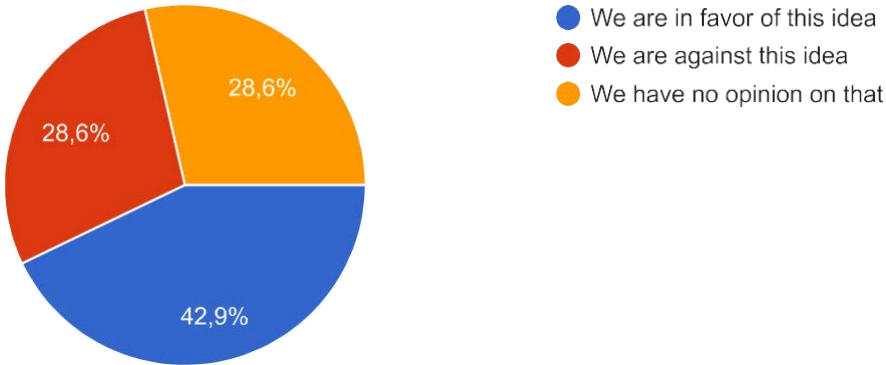
We don't know what CC or RC stand for

Some teams may not participate if not in CC but I doubt some teams in CC can do this.

We do not understand the practical implementation of this idea.

What is the meaning of "RC"?

Idea 34 - GameController only communicates states INITIAL, PLAYING, and FINISHED. Everything else is only communicated through whistles, speech, and gestures



Comments idea 34 ?

Broadly positive towards this, but over several years rather than 1.

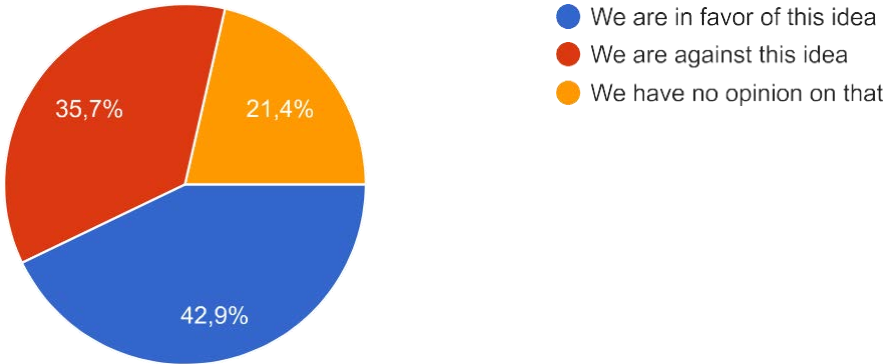
This doesn't improve soccer gameplay. We want soccer to improve, not get worse.

We agree but not with audio signals

In favor once the NAO has more compute power (so longer term)

We prefer the simpler version of Idea 2

Idea 35 - Developing a shared architecture / interface between modules across the league to more easily shred and port modules between teams, or even across Robocup leagues.

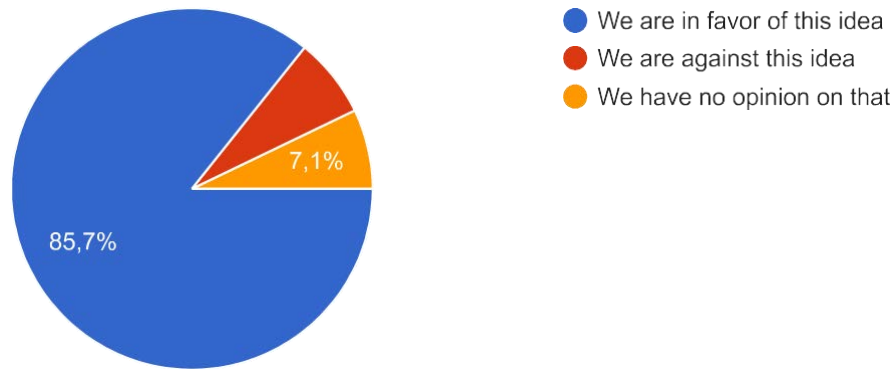


Comments idea 35 ?

Does not work and makes things more complicated.

Proper documentation and open source should be enforced instead

Idea 36 - Greater incentive and rewarding at comp elements of the league outside of “winning” the tournament, for aspects such as increasing league growth, software architecture development, creating league tools, etc.



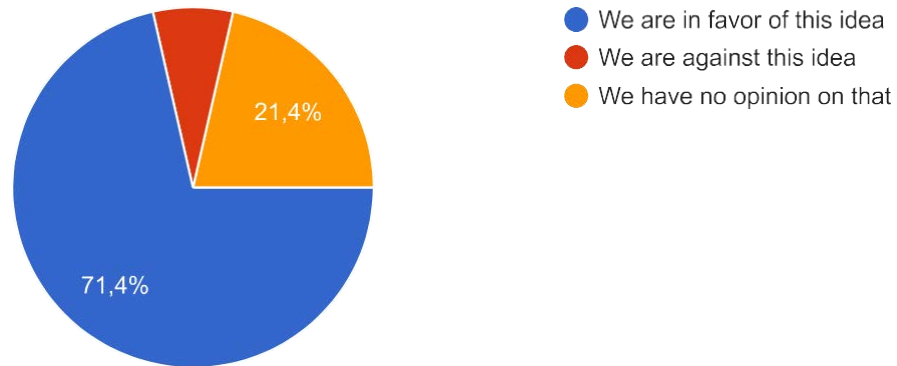
Comments idea 36 ?

Actually, if people like to do this, they do it, independent of whether there is a reward.

More prizes to incentivize more team innovation and league advancement as a whole

We would prefer a trophy for 3rd place CC instead of 2nd place CS.

Idea 37 - A common simulator that could run binaries of the robot software to be provided by every team (alongside their code release) after RoboCup. This would allow every team to practice against other teams during the year, fix bugs, and come up with counter strategies, etc., ultimately raising the standard of all teams.



Comments idea 37 ?

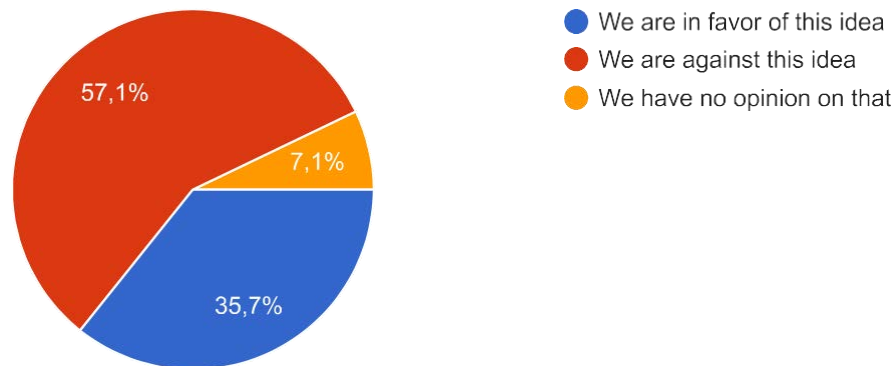
This is nice, but is quite difficult.

Please include robotic code sources :)

Good idea, hard to realize. The question is who is doing this.

There are simulation leagues already. We don't want to spend effort to make our parameters work on an arbitrary simulation platform. Reality is a strange simulation already, lets keep it that way.

Idea 38 - Street/anywhere/training ground football. The playing area is just marked by cones (not guaranteed to be evenly spaced or perfectly colinear or parallel). Motivation to develop a more flexible approach to self localisation and enable such a game to be set up on different fields/sizes regardless of what marks are already on the field. [See suggestion 18]



Comments idea 38 ?

Needs to be done over several years I think.

Not for the main competition.

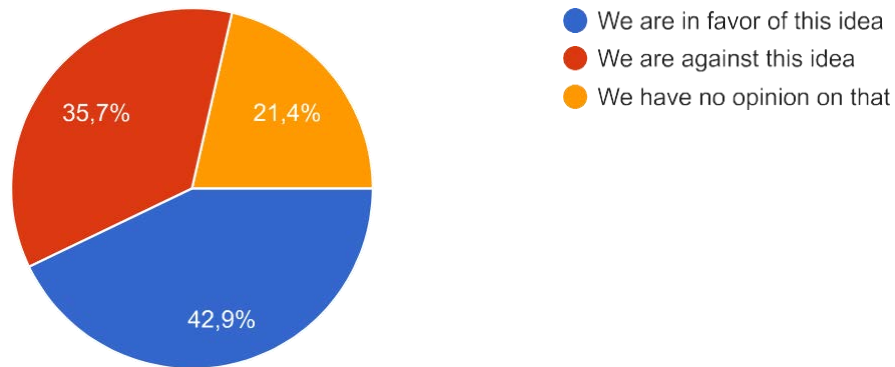
Not related to 2050 goal.

We wouldn't like our robots to be worn out faster because of that

This is a good idea for a challenge, but not so much for the league's ultimate objective. Also, we (SPQR Team) already explored this idea in a paper for last year's RoboCup symposium (<https://arxiv.org/abs/2405.12628>)

hardware damages

Idea 39 - Permit human coach signaling using gestures and/or speech. (It is normal for the coach to provide sideline guidance in real football, so why not SPL?) This would further develop a HRI and human-robot collaboration aspect of the league.



Comments idea 39 ?

We are doing AI, not NI.

See previous comments on audio. This is far to open to abuse of things like "making the robot kick"

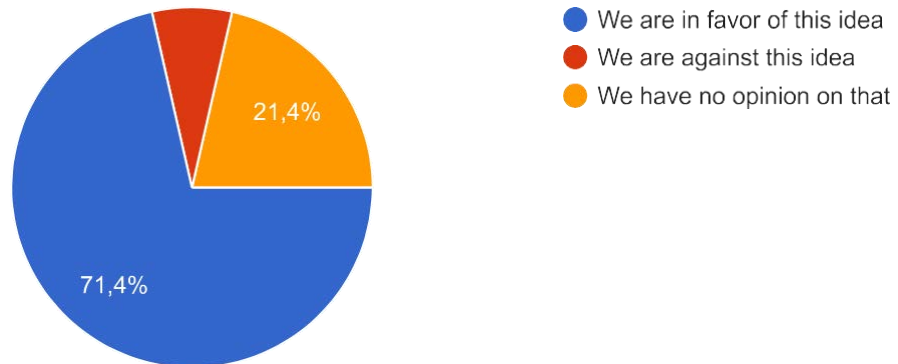
Currently you can do this already, since this is not permitted.

This would probably end up like the "coach robot" from past rules: difficult to implement reliably and provides little advantages, so no team will implement it.

Not only are we in favor, we (SPQR Team) already explored this idea in a paper for a past RoboCup symposium (https://scholar.google.it/citations?view_op=view_citation&citation_for_view=Y8LuLfoAAAAJ:ufrVoPGSRksC)

Small Rule Changes to Consider

Idea 40 - Make recognizing and responding to visual ref signals worth the risk



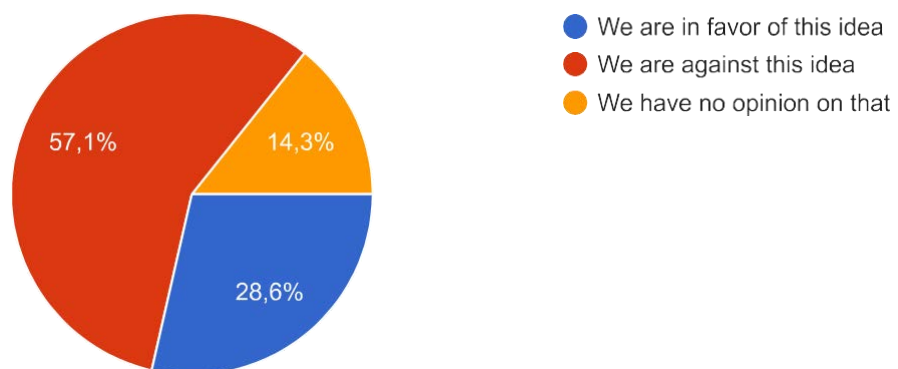
Comments idea 40 ?

It is difficult to gather the necessary resources to develop and comply with each rule

depends on the "how"

imprecises specs

Idea 41 - Remove the ability to strategically pick up robots in Set



Comments idea 41 ?

The strategy can be "save robots", i.e. you spare robots for upcoming games.

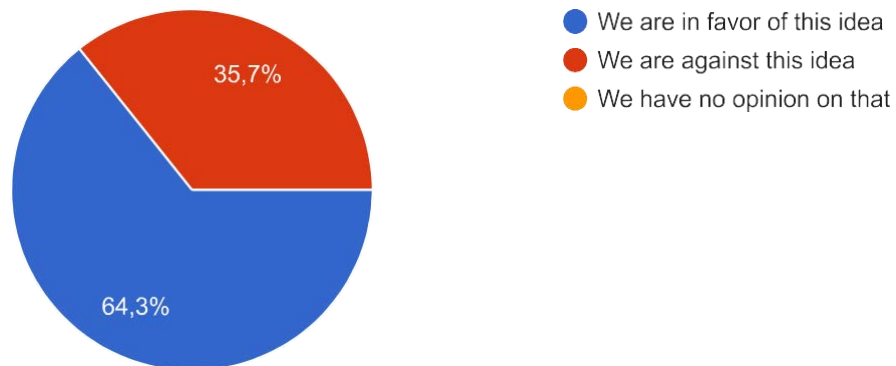
The league still needs help is making good soccer gameplay. Badly mislocalised robots just lead to bad gameplay with no hope of recovery

Maybe add another rule to strategically replace robots by another way (like in real soccer), e.g. a limited number of substitutions

Hard to define what "strategic" is here...

Also playing with less robots on purpose is a valid strategy to conserve hardware.

Idea 42 - Add a cost for dealing with the referee improperly (e.g. excessive shouting) such as the ability to remove some of the team's remaining packet budget, or to permanently remove a player from play



Comments idea 42 ?

The referee could remove offending persons from the game, i.e. send them away.

This is hard to quantify. The current suggestions are just open to starting major fights at competition. There are other more appropriate human-relationship approaches to bad human behaviour.

yellow/red card? (as in real soccer)

We think some teams let the passion act on our senses and end up being a little mean to refs

Maybe think about yellow and red card. And removing messages is a good idea.

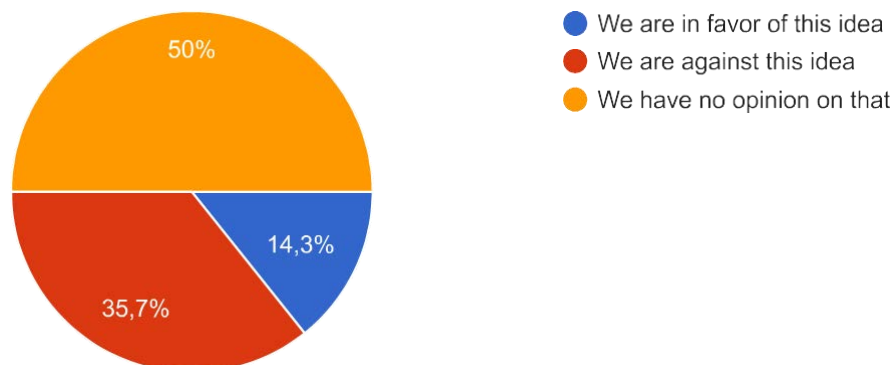
Teams should be reprimanded, not necessarily the game impacted.

Clarification: we are only against this idea as written, i.e. as an immediate decision the referee takes in the middle of the game. The referee is still human, and we fear that stress and emotion might have an undue weight in this kind of impulse decision, leading to unnecessary disruption of the game.

As a counterproposal, please consider a (different) penalty assigned after the game with the consensus of more than one referee (maybe at least two, maybe all four of them). This pushes the decision away from the heat of the moment and forces a little analysis to determine whether the situation actually calls for a penalty.

enforce the actual rules like free coaching zone

Idea 43 - Add a DHCP server connection for non-team devices connection for devices that don't require team specific subnet identifiers

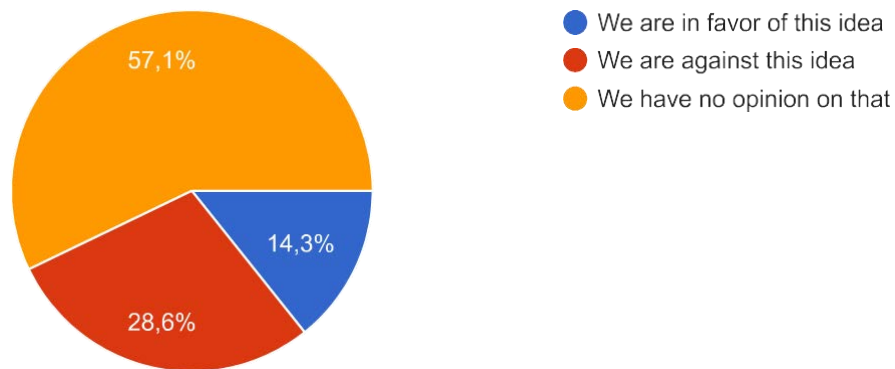


Comments idea 43 ?

I don't understand this one

The purpose of such devices is unclear. We are fine with it as long as they are only listening. In that case, could the same server be used for idea 28? It would separate "game" devices (robots, debug packets receiver) from "guest" devices (everyone else).

Idea 44 - Switch the league to IPv6



Comments idea 44 ?

No need for it

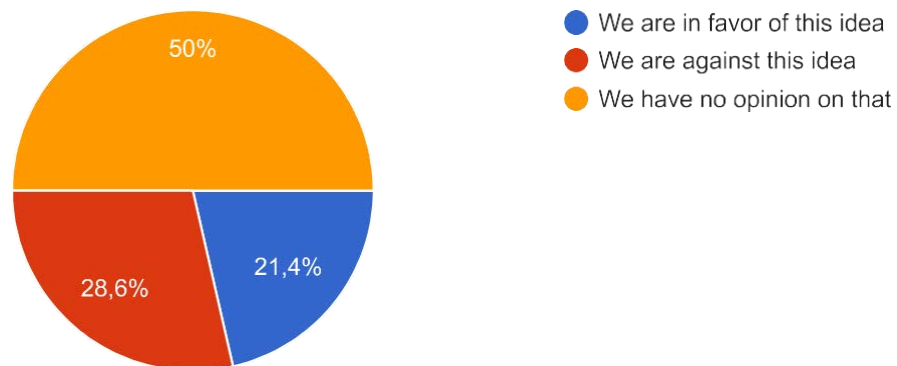
What would be the benefit? Who upgrades the existing tools of the league?

We think there's not current IPv4 limitations for the league, IPv6 won't give any advantage

No obvious advantage and would require game controller protocol changes due to lack of UDP broadcasts.

We don't have that many devices on the network, so are there enough benefits to justify the cost of switching everything?

Idea 45 - About referee duty for interleaved games: swap head/side roles for the two games, so that Team A is head ref for game 1 and team B is head ref for game 2. Pros: the individual refs are relieved of stress since they don't have to arbitrate two games in a row in the same role. Cons: each team would have to provide up to four referees per set of interleaved games, as opposed to the two referees under the current system.



Comments idea 45 ?

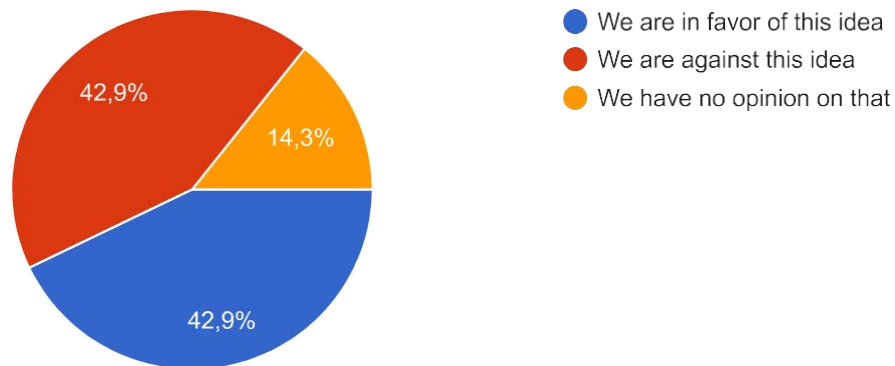
If the experience of both referee teams is similar, this is ok. If they differ significantly, the more experienced team should provide the head referee and GameController operator.

This isn't a rules thing, but useful for the OC.

make it optional (referees decision)

Should be left up to the teams to decide.

Idea 46 - Detecting a failed get-up-attempt and aborting early is punished by the rules. Limit the allowed get-up-attempts only by duration of the robot being fallen and not by the number of attempts. This allows teams to innovate in this area. Being fallen is already a punishment in itself and doesn't need additional harsh punishments by the rules.



Comments idea 46 ?

Too difficult to accurately referee. The fallen count is simple to track. Time is hard to track.

only if fully automated by ai vision system

The rule should only apply if there's a robot making the fallen robot stucked, hence this will allow for the robot to seek an interval in which it can stand, but it should not be applied always since the fallen robot occupies a certain big area

Counting seconds, makes it harder for the referees. But that aborted get upd should not count is a valid point.

use inactive time frame instead