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NATURE, NEWS & VIEWS

Unveiling the Secrets of AI Cooperation: Lessons from the Game of Diplomacy

Throughout history, human civilisation has thrived on one core principle: cooperation.
We have overcome great obstacles and accomplished remarkable success because of our ability to work as a team, build trust and resolve conflicts effectively.
But what if we could programme machines to accomplish the same thing?
Enter 'Diplomacy,' a game with simple rules and complex strategies that is being used to train AI to cooperate through negotiation, alliances, and communication.

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Artificial intelligence (AI) is neither inherently cooperative or self-serving, but rather, its nature is formed by the objectives and incentives that its creator has programmed into it in order to maximise its effectiveness for performing a specific task.
Due to the fact that each AI model may have to compete with other models in order to further its own goals, conflicts may occur when several AI models operate in the same environment.
Because of these competing goals, the collective output may not be maximised, resulting in suboptimal outcomes.
To address this issue, AI developers can design systems that prioritise cooperation among AI models, but in order to do so, they first need to better understand the factors that encourage and hinder cooperation.

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To gain insight into how to incorporate cooperation into AI systems, a recent study conducted by Nature Communication has used the game 'Diplomacy' to simulate the complex environment AI models must navigate when working together.
This is an effective way to observe cooperation in AI as each individual model has the same objective of winning but must interact with each other and form team-oriented tactics to achieve its goals.
The experiment involved observing the outcome and performance for AI models that acted as 'negotiators' and 'non-communicators'.

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The experiment revealed that models that communicated and negotiated (negotiator) outperformed models that did not interact with other models (non-communicators).
Yet, deceptive communicators (subset of negotiators - deviators) ultimately prevailed over truthful communicators.
This indicates that, while cooperation yields superior results, it's highly susceptible to broken agreements, which is a major impediment to cooperation.
Researchers suggest that impediment can be mitigated by introducing sanctions for deviation of agreements, the ability for models to retaliate and expectations of future interactions with peers. However, additional research is needed to evaluate the costs and advantages of the suggested mitigating measures.

This study's findings will enable designers to create AI systems with components that collaborate more successfully by mitigating factors that impede cooperation.

This means that these systems will be more capable of solving difficult problems, operating in dynamic environments, and delivering better shared outcomes for its users.
Furthermore, researching and studying cooperation in AI can offer important insights into human cooperation.
Understanding how these machines cooperate and solve problems can inform and enhance our own cooperative behaviours, leading to better collaboration and shared outcomes within our own lives.

In the quest for efficient machine interaction, the development of cooperative AI systems is vital, and 'Diplomacy' has proven to be a valuable tool in achieving this goal.
The study of cooperation in AI offers academics a wealth of knowledge that can direct the development of machines that collaborate effectively to solve complex challenges and achieve shared goals.
Furthermore, this knowledge can also inform human cooperation strategies, leading to better collaboration and outcomes in all areas of life.
As AI systems progress, prioritising cooperation will be key to realising their full potential and creating a better future for humanity.

DOMINION POST

Diplomacy Goes High-Tech: How Intelligent Machines Are Learning to Work Together and Play Fair

Move over, lone wolf AI - it's time to learn how to play nice with others! ✓
As we continue to push the boundaries of what artificial intelligence (AI) can achieve, the next big hurdle is teaching machines to cooperate and work together towards shared goals. How to do this? Diplomacy.

Diplomacy is a game where players take on the roles of world leaders during World War I and compete to conquer Europe.
The catch is that you can't win without making deals, breaking promises, and betraying your friends.
Like Game of Thrones, it is a cutthroat game of politics, strategy, and cunning but with maps and army tokens instead of dragons and swords.

Playing the game Diplomacy is a useful tool for teaching AI models to work together.
In Diplomacy, multiple players have the same objective of winning, but must form alliances and negotiate with each other to achieve their individual goals.
This requires each individual AI model to learn to interact with other models, form team-oriented tactics, and communicate effectively.

In a recent study conducted by Nature Communication, scientists created AI models that could play the game Diplomacy to better understand which components helped and hindered cooperation.
They found that AI models that worked together (negotiators) beat lone wolf AI models (non-communicators) but lost to other negotiators who were deceptive as they were too trusting.

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The battle between trustworthy AI models and deceitful ones has some simple solutions. According to scientists, we can punish deceitful AI models, allow other honest models to retaliate, or threaten our sneakier models with additional games with the same AI models (making them scared of future retaliation).
However, we'll have to wait for more research to come in before we start building our cooperative AI overlords as we're not too sure how these models will respond.

With the knowledge gained from teaching AI Diplomacy, developers are more equipped to create AI systems that work together better.
These AI systems will be the ultimate problem-solving partners, capable of navigating complex environments and tackling challenges with ease.
And it doesn't stop there - by studying and implementing cooperation in AI, we can gain valuable insights into human cooperation as well.
The game Diplomacy has already taught us that communication and negotiation are key components of successful cooperation, but there's still so much more to discover.
From mitigating deceptive behaviour to encouraging trustworthy behaviour, the lessons learned from cooperative AI can be applied to make human cooperation even better!

Wrap up your army tokens and pack away your maps, because Diplomacy isn't just a game anymore - it's a vital tool for teaching AI models how to cooperate effectively.
Thanks to studies like how to improve AI cooperation using Diplomacy, we now have a roadmap for creating AI systems that prioritise trust, honesty, and communication.
And who knows? The lessons learned from cooperative AI could even inform and improve human cooperation in all areas of life.
So let's raise a glass to the power of Diplomacy - and to a future where we and our machines can all work together to achieve our goals, both big and small.

Quite a bit of repetition in these final paragraphs.

Better to wrap up concisely.