



The state of AI

Report summary

In September 2017, President Putin stated that “Artificial intelligence is not only the future of Russia, it is the future of all mankind. [...] The one who becomes the leader in this sphere will be the lord of the world”. In September 2018, the Pentagon pledged to make the largest investment to date in artificial intelligence systems for US weaponry, committing to spend USD 2 billion over the next five years to “develop [the] next wave of AI technologies”. But it is not only the United States and Russia that are investing in the military application of AI; other countries also have specific programmes looking at how to best apply these new technologies to warfare.

This *State of AI* report analyses developments in 7 key countries: the United States, China, Russia, the United Kingdom, France, Israel and South Korea. These states are among those most heavily involved in AI development, particularly with regard to its military applications. The report discusses the national AI policies and military AI strategies of each country. It also looks at AI-related military projects, including cooperation with the private sector and academia. The research is based on information available in the public domain. It is not intended to be an exhaustive overview.

Emerging AI arms race

The analysis shows clear signs of the start of an AI arms race:

- The research shows all 7 states are implementing national policies and programmes with the aim of developing the military application of AI. The majority of states in this report are implementing specific research programmes to look at how to use AI in the military, as well as programmes to stimulate cooperation with tech companies and universities to make use of their expertise.
- Secondly, the report demonstrates states are increasing their investments into the military application of AI. This is the case most notably for US, that has decided to invest USD 2 billion over the next five years through its Defense Advanced Research Projects Agency (DARPA), to “develop [the] next wave of AI technologies”.
- Thirdly, there is an increase in rhetoric from all 7 states around the need to invest in military AI in order to not fall behind adversaries. As leading expert Paul Scharre notes: “The main rationale for building fully autonomous weapons seems to be the assumption that others might do so,” which risks becoming a “self-fulfilling prophecy.”

Negative consequences

There are no winners in an AI arms race. The fact that autonomous weapon technologies, once developed, will likely proliferate widely and be available to a wide variety of actors, means that the military advantage of these systems will be temporary and limited. A fully-fledged AI arms race will have severe negative security, political and societal impacts.

- An AI arms race would be severely destabilizing, endangering international peace and security.
- The huge amounts of money invested in military technologies should alternatively be used for education, healthcare and other socio-economic purposes.
- Furthermore, an AI arms race would push states to develop autonomous systems as rapidly as possible to keep ahead of adversaries, with little time for appropriate reflection on the long-term effects of the introduction of such new technologies.

So states should not be asking ‘How can we *win* the AI arms race?’ but rather ‘How can we *prevent* an AI arms race?’



Ethical and legal concerns

In addition to the significant and real risk of the AI arms race escalating further, the increasing levels of autonomy in weapons systems also raise serious legal and ethical concerns. Decisions over life and death should not be reduced to an algorithm because it would go against the principles of human dignity and the right to life. In addition, lethal autonomous weapons are unlikely to be able to adhere to fundamental principles of International Humanitarian Law, such as distinguishing between civilians and soldiers. Even harder is the proportionality assessment that weighs civilian harm in relation to military advantage. It is impossible to simply program international law, as it is always dependent on interpretation of the context.

States need to draw clear lines and guarantee human control

Lethal autonomous weapons are being developed within a continuum, with levels of technology varying from simple automation to full autonomy, but all of these developments together move down a slippery slope where the human role is gradually diminishing in the decision-making loop regarding the use of force. Therefore it is imperative that states draw a clear line, guaranteeing meaningful human control over decisions on the use of force. Allowing the development of weapon systems with increased levels of autonomy without a clear international legal norm in place is undesirable and dangerous.

Key role for the tech sector

This report also shows the linkages between the public and private sectors in the area of military technology with increasingly autonomous capabilities. States mostly commission companies and research institutes to develop increasingly autonomous weapons. Whereas in the past this was naturally the domain of the arms industry, with the emergence of the digital era, the tech sector and tech departments at universities have become increasingly involved.

While we believe states should lead developments towards a pre-emptive ban on lethal autonomous weapons without meaningful human control, we also believe that scientists and companies working on these and related technologies have an interest and indeed a role to play in preventing such weapons from becoming reality.

Recommendations

States

States should aim to work together to implement clear international regulation and confidence-building measures to avoid the emerging AI arms race from escalating further. Therefore PAX recommends states undertake the following:

- Immediately install a national moratorium on the development, production and use of lethal autonomous weapons;
- Work towards a legally binding instrument that ensures meaningful human control over the use of force and prohibits weapons that can autonomously select and attack targets;
- Develop and implement confidence-building measures to reduce the concerns that other states are developing lethal autonomous weapons.

Private sector

The private sector should:

- Commit to not contributing to the development of lethal autonomous weapons.
- Develop and implement clear policies and internal guidelines to this effect

For the full report, please visit www.reprogrammingwar.org