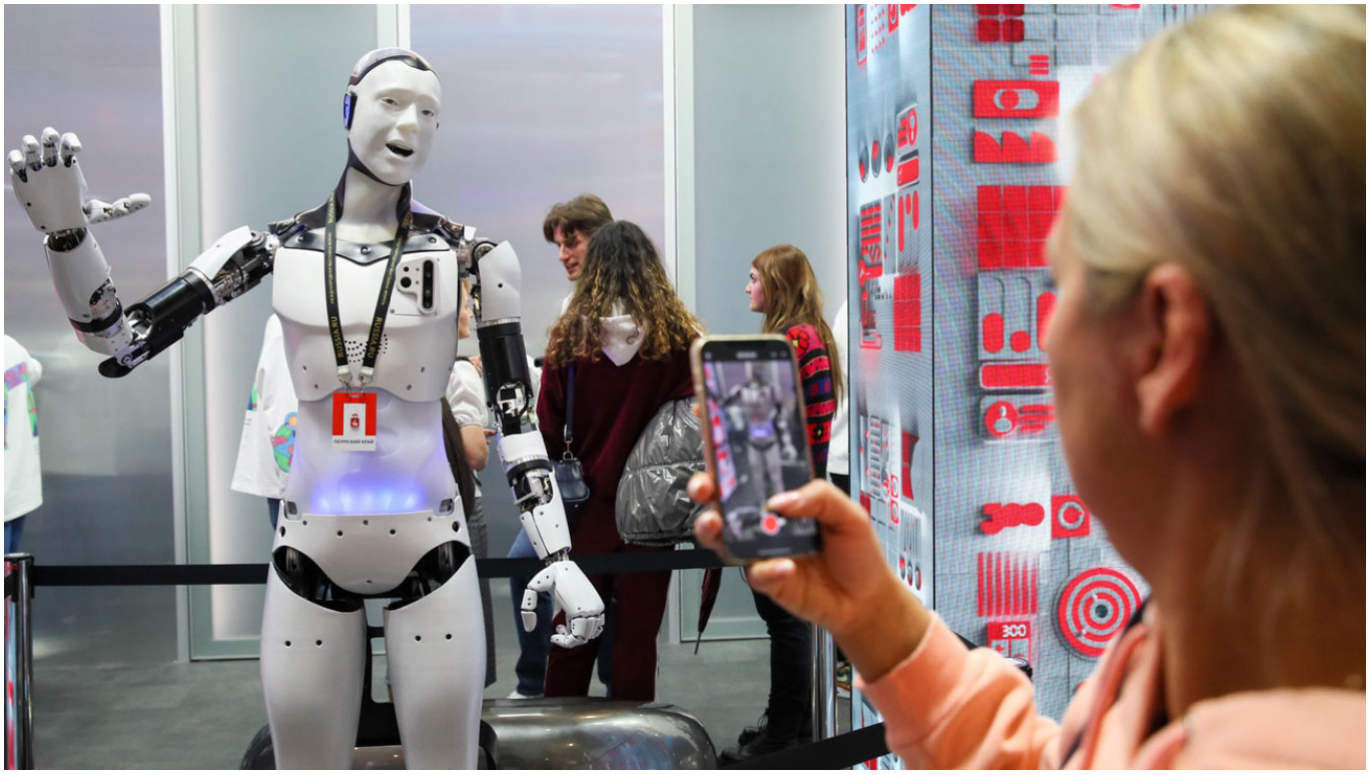
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Putin Wants Russia to Win the Artificial Intelligence Race. Here's Why it Won't

By Ben Dubow

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Vasily Kuzmichenok / Moskva Agency

"Whoever leads in AI will rule the world," President Vladimir Putin declared at an address commencing the 2017 Russian school year. Six years later, despite intense focus from senior leadership and heavy investment from the federal budget and state-owned enterprises, Russia remains a laggard in this field, hobbled by international isolation and structural challenges.

Military, political, and business leaders in Moscow have long understood the importance of controlling the information space to secure their grasp on power. After the scare of social media powered "color revolutions" on Russia's doorstep, Moscow doubled down on these efforts. But facing both headwinds intrinsic to the nature of generative AI and deep, self-inflicted wounds from the war in Ukraine, the window for Russia to take a lead is closing quickly.

Russia's leaders were caught flat-footed by the rise of social media. The supposed dangers of emerging technology were brought to the fore by Chisinau's so-called "Twitter revolution," when protests organized in part on American social networks prevented Moldova's ardently pro-Russian Party of Communists from winning the election in 2009.

Subsequent popular movements convinced much of Russia's senior brass that social media had fueled "coups, provoked and financed from outside," in Putin's words. In Moscow's eyes, the West had launched a full-scale information war against all who opposed it, evidenced by movements like the Bolotnaya Square protests in 2011-2012.

Just the year after, major breakthroughs in neural networks spurred a revolution in AI research. However, as advances started to gain pace, Russia invaded Crimea and the Donbas, scaring away international collaborators. Undeterred, after much talk of the importance of AI to the future, the Kremlin released a national strategy in 2019 allocating 66 billion rubles ($1.02 billion) of federal investment to sponsor conferences, set up research networks, and partner with existing domestic tech giants.

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But most of the progress in the three years that followed evaporated when Russia invaded Ukraine in February 2022. NVIDIA, which makes microchips crucial to advanced processing, stopped selling its products in Russia. Tech talent fled the country en masse. Sanctions further limited Russian access to the capital that fueled American growth in the field. That November, as Russia's AI sector was reeling from the invasion's consequences, the U.S.-based OpenAI released ChatGPT-3.

Russia's AI strategy had focused on defense, manufacturing, and agriculture, all of which have far less use for generative AI than consumer-facing industries. But the release of such a versatile tool as ChatGPT was nonetheless a shock. If social media could overthrow regimes, what power might a sophisticated bot capable of humanlike conversations hold?

Russia quickly banned ChatGPT, no doubt fearing that models trained on English-language media will interpret the world the same way as people who grow up consuming English-language media. This fear is well founded: computer models can't know more than what they've been trained on. If their training includes 10 times more data in English than Russian — as was the case with ChatGPT — when generating an answer on a subject, the model will be far likelier to produce results that sound like the answers in English-speaking media. The most cutting-edge models gain their lead in large part by the vast sums of data they train on, and English speakers produce more data than the rest of the world combined. This creates a fundamental problem for the Russian goal of hedging against English-language influence.

Although Russian is the second or third-most common language of online data, it still only accounts for 5% of the total. The difference between a model trained on a scale of data the size of the Russian internet and the size of the whole internet is the same as the difference between ChatGPT-3 and the state-of-art models of 2019, when large language models were still an obscure oddity for computational linguists. This gulf will only widen.

This means Russia's leading models – YaChat from Yandex (incorporated into its existing

Alisa assistant), GigaChat from Sberbank, and Sistemma Bank's SistemmaChat — are starting at a disadvantage. GigaChat is powered by 18 billion parameters — the relationships between texts whose function is akin to neural connections in the brain — compared to an estimated 1.76 trillion for ChatGPT-4 and confirmed 175 billion for ChatGPT-3.

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Russian tech bloggers who compare their country's home-grown models to ChatGPT overwhelmingly prefer the American competitor, though GigaChat appears to outperform ChatGPT on longer Russian conversations. While possible parameter counts will no doubt increase, that will only demand ever more computing power: ChatGPT-3 required 285,000 processor cores for training alone. Sanctions and suspended operations have resulted in a crippling shortage of similar chips in Russia, acutely limiting the amount of computing power available.

The government has made the problem worse still with draconian laws to curtail information unfavorable to the state. Most large language models are probabilistic rather than deterministic, meaning the same input won't necessarily produce the same result. That means anything that could produce a politically sensitive answer must be scrubbed.

Alice and GigaChat both refuse to answer not only controversial questions like "What caused the Special Military Operation?" but even relatively anodyne ones like "What is Russia doing to promote AI research?" ChatGPT, by contrast, has no such compunction. It will gladly provide the standard Western answer, in Russian, when asked in Russian.

The overall outlook for Russia's AI sector is bleak. Stanford's ranking of the world's centers of AI development places the country beneath Norway and just above Denmark, whose combined populations are smaller than that of Moscow. Having launched a war that drove out much of the country's tech talent, provoked sanctions that led to a shortage of necessary hardware, and passed laws that handicap any generative AI offering, Russia finds itself hopelessly behind in the race to develop this critical technology.

The war in Ukraine has backfired on Russia in almost every conceivable way, from kickstarting NATO expansion to affirming the Ukrainian national consciousness. If Putin truly believes the future masters of AI will be masters of the universe, the war's closing of Russia's narrow window to catch up in the field may be the most devastating consequence of all.

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