THREAT ANALYSIS

IRAN

Recorded Future®

By Insikt Group®

April 17, 2025

Iran's AI Ambitions:

Balancing Economic Isolation with National Security Imperatives

The Iranian government has articulated lofty goals for its development of AI, viewing its indigenous AI capabilities as a matter of national sovereignty and strategic clout.

Tehran's economic isolation and government-driven innovation effort almost certainly hinder AI advances; as such, Iran will likely seek to cooperate with Western adversaries to enhance its AI-related research and development.

Iran very likely seeks to use AI to bolster its capabilities in four areas of national security: cyberattacks, influence operations, military and intelligence systems, and domestic repression.

Executive Summary

Iran recognizes the vital role artificial intelligence (AI) will play in its future economic viability, regional influence, and national security and has begun to implement a top-down effort to achieve regional technological competitiveness. Since the Supreme Leader issued a directive in 2021, Iran has endeavored to develop a national strategy and oversight mechanism for AI and foster a technological ecosystem to drive domestic research and development. However, two key factors — Tehran's global economic isolation, and its deeply entrenched system of government control and oversight — have almost certainly hindered Iran's national AI development.

In 2024, as Tehran's support for its proxies Hamas and Hezbollah against Israel embroiled Iran in unprecedented regional conflicts and ongoing cyberwarfare, new insights emerged about how Iran has implemented AI technologies in its national security apparatus. Iran has used AI to bolster its capabilities in four main areas: cyberattacks, influence operations, military and intelligence systems, and domestic repression. These priorities will continue to propel Iran's development and implementation of AI, almost certainly posing an increasing threat to Iran's Western and regional adversaries. In cyberspace, AI will likely augment Iranian threat actors' spearphishing and social engineering tradecraft, while AI's implementation in Iran's drone and missile arsenal is likely to pose the greatest physical threat from emerging technology.

Iran's approach to AI will likely mirror its broader strategic ambitions — to be a regional power and assert its national sovereignty — by building and implementing advanced technological capabilities. Iranian government initiatives are likely to be the driving force behind Iran's AI development priorities, particularly given the absence of a flourishing AI private sector. While Tehran will promote its own technological prowess and indigenous AI development, the Iranian government is likely to leverage its relationship with China and Russia in various security realms to bolster its AI technology capabilities. Private industry, particularly companies in the AI or technology resources industry, should closely monitor end users of their models or materials to ensure Iranian threat actors are not using their products or acquiring controlled technologies. Similarly, governments should invest in identifying and preventing the Iranian defense industry from acquiring AI technologies that enhance its military capabilities.

Key Findings

- Iran has articulated lofty goals for its AI advancement and seeks to compete in the global AI race, but it is almost certainly hindered by two factors: First, its economic and commercial isolation limits its access to technological resources and human capital. Second, its top-down government control and oversight stifles private innovation in AI.
- To augment its own indigenous research and development (R&D) capabilities in AI, Iran will likely leverage its bilateral and regional relationships for technology engagement with China, Russia, and other non-Western countries.
- Amidst unprecedented domestic upheaval and regional conflict over the last three years, Iran very likely views AI as a key force multiplier for its national security and defense and has sought to integrate AI into its cyber and influence operations, military systems, and domestic surveillance infrastructure.
- It is very likely that Iranian threat actors will increasingly use generative AI and large language models (LLMs) to enhance their influence and cyber operations, increasing risk to adversarial governments, as well as their critical infrastructure, technology companies, and other security-related industries.
- Iran has very likely endeavored to implement AI in its military defense systems and publicly touts the capability, though its operational uses of the technologies remain unproven.
- In the domestic sphere, Iran has very likely increased its efforts to deploy AI for morality enforcement and opposition monitoring, to enhance its control over Iranian society, particularly after the Woman Life Freedom protest movement.
- Companies and governments should maintain vigilance in cybersecurity practices to reduce vulnerabilities to AI-enabled cyber and influence operations and limit Iran's access to AI resources and expertise that could increase Tehran's threat to regional security.

Iran's AI Ambitions

At the highest level of its leadership, Iran has recognized and sought to develop an overarching national focus on AI (هوش مصنوعی in Persian). In November 2021, Supreme Leader Ali Khamenei called AI "an important and futuristic issue" that will "play a role in the future administration of the world," and urged Iran to become a top ten country in the field of AI.[1] In August 2024, Khamenei urged Iran to "master" and "develop the deep and diverse layers of AI technology," warning that a global oversight body (similar to the International Atomic Energy Agency [IAEA]) might regulate its use in the future. Khamenei's stated ambition for Iran's AI prominence initiated a flurry of government-led activity to develop and implement a national strategy and technological ecosystem to align with the Supreme Leader's intent. Iran subsequently began creating a national AI roadmap that evaluated the "strategic documents" of 23 countries in the field of AI and developed a plan to realize Khamenei's goal by 2032.[2] The goals of the roadmap document were to achieve "80 percent of research to meet the needs of the country, use of 45 percent of AI in industries, $8 billion investment in AI, and a 12 percent share of AI in the GDP." The document contained fourteen "macro policies," 47 "micro-policies," 39 "general actions," and 155 "projects and activities." According to the roadmap, by the Persian year 1410 (starting March 2031), Iran would need to train 600,000 experts in the AI field to accomplish these objectives.[3]

Iran's presidency — specifically, the Vice Presidency for Science, Technology and Knowledge-based Economy — oversees the Iranian government's effort to establish and implement an AI strategy. On December 3, 2023, President Ebrahim Raisi issued an executive order to establish the "National Steering Committee and the National Artificial Intelligence (AI) Center," which would "focus on creating integrated AI processing and data service providers, aligning with the country's needs, and implementing large-scale AI projects."[4] [5] He appointed Reshad Hosseini as Secretary for the Development of Artificial Intelligence and Robotics Headquarters, a role intended to develop a "technology development roadmap" and to make "maximum use of all the internal capacity of the innovation ecosystem."[6] Iran's AI Strategic Council was to be formed of "ministers and heads of relevant institutions" to "implement, coordinate, and monitor" a National AI Document.[7]

After Raisi's death in May 2024, the administration of President Masoud Pezeshkian has continued to emphasize Iran's AI strategy. The National AI Organization (or the National Organization for AI) was inaugurated in July 2024 in Tehran.[8] Insikt Group identified the organization's physical location in north central Tehran, on Molla Sadra Street (**Figures 1-3**). During Pezeshkian's endorsement ceremony and National Government Week meeting in August 2024, Khamenei advised the new administration that the "good initiative" begun under deceased President Raisi "unfortunately remains unfinished," but advised

[1] *https://english.khamenei[.]ir/news/8762/Colonial-powers-try-to-persuade-nations-into-ignoring-their-talents*
[2] *https://www.tehrantimes[.]com/news/469628/Iran-plans-to-become-a-leading-country-in-AI*
[3] *https://www.mehrnews[.]com/news/5412510*
[4] *https://www.tehrantimes[.]com/news/500990/National-center-for-artificial-intelligence-inaugurated*
[5] *https://ifpnews[.]com/iran-ai-strategic-council/*
[6] *https://en.isti[.]ir/News%E2%80%93Archive/The-Secretary-was-appointed-for-the-Development-of-Artificial-Intelligence-and-Robotics-Technologies-Headquarters/94074*
[7] *https://www.tasnimnews[.]com/en/news/2024/07/10/3119547/iran-national-ai-organization-inaugurated-in-tehran*
[8] *https://en.mehrnews[.]com/news/217584/Iran-National-AI-Org-inaugurated-in-Tehran*

that the National AI Organization, under the direct supervision of the President, should continue Raisi's progress.[9] On October 15, 2024, Iran's Information Technology Council issued a decision that "within two months, the National Organization of Artificial Intelligence should present to the working group the requirements for creating, developing, maintaining and publishing data and information in the hyper scale database of artificial intelligence."[10]

Pezeshkian appointed Hossein Afshin, a professor of mechanical engineering at Sharif University of Technology, as his Vice President for Science, Technology, and Knowledge-based Economy, who also serves as the secretary and vice president of the National AI Organization and serves as the face of AI development within Iran.[11] Pezeshkian also assigned his First Vice President, Dr. Mohammad Reza Aref, as chairman of the National AI Organization and its strategic council.[12] Aref's appointment as First Vice President prompted criticism for his "political obscurity," likely reflecting Pezeshkian's choice for the position was based on his scientific prowess and technical acuity rather than his accomplishments as a reformist politician.[13] The prominent role of Aref — who holds two advanced degrees in electrical engineering from Stanford University, has been a professor at two prestigious Iranian universities, and has published scholarly articles on information technology — as Pezeshkian's deputy with oversight of the country's AI program suggests an increasing recognition of the importance of AI.

Figure 1: *Inauguration of Iran's National Artificial Intelligence Organization in Tehran (Source: Mehr News[14])*

[9] *https://english.khamenei[.]ir/news/11073/Today-Iran-is-known-in-the-world-for-its-science-military-advancements*
[10] *https://itec.gov[.]ir/en/law/335/artificial-intelligence*
[11] *https://cistc[.]ir/en/4957/iran-president-appoints-hossein-afshin-as-vice-president-for-science/*
[12] *https://en.isti[.]ir/Strategic-Technology-Development-Center-News-Archive/The-artificial-intelligence-organization-has-not-been-removed-from-the-Vice-Presidency-of-Science*
[13] *https://iranwire[.]com/en/politics/132321-mohammad-reza-aref-the-return-of-a-reformist/*
[14] *https://en.mehrnews[.]com/photo/217597/Inauguration-of-Iran-National-Intelligence-Org-in-Tehran*

Figure 2: *Exterior of the National Artificial Intelligence Organization (Source: Google Maps)*

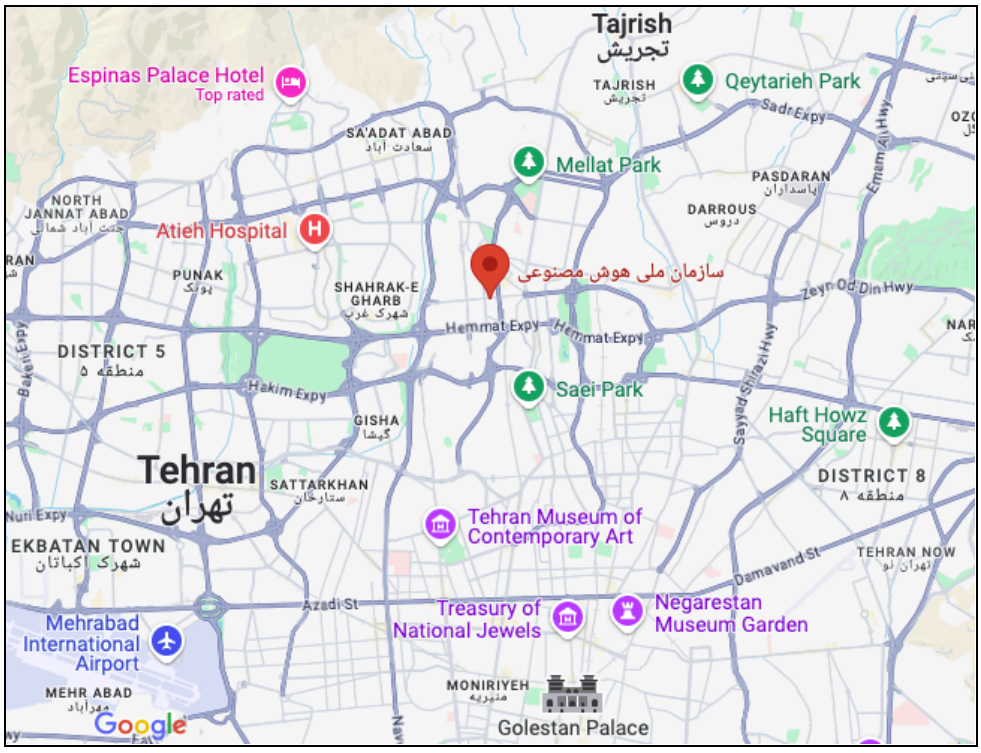

Figure 3: *Location of the National Artificial Intelligence Organization (Source: Google Maps)*

Laying the Foundations of an AI Ecosystem

Insikt Group examined Iranian government statements, press releases, leadership speeches, academic journals, industry websites, and news media, all of which provide key insights into the development and deployment of AI in Iran. However, these sources often provide broad knowledge about Iran's ambitions or intentions regarding AI and lack details on the specific models, technology, or deployment of AI in support of national security objectives. Western AI companies, such as OpenAI, Google, and Microsoft, as well as global cybersecurity and military experts, offer additional perspectives and analysis of Iran's AI use cases.

National AI Strategy Development and Challenges

Following its leader's 2021 directive, the Islamic Republic has striven to develop and integrate AI through the establishment of various bureaucratic entities and industry initiatives. Iran's progress in AI advancement is almost certainly limited by two factors: (1) its economic and commercial isolation and (2) its government control and oversight. After years of international sanctions and commercial isolation, Iran's technological advancement, particularly in security-related industries such as defense, energy, and maritime shipping, depends on indigenous and domestically engineered capabilities.[15] [16] Iran strives for self-sufficiency in various sectors, including food and energy, and this concept of a "resistance economy,"[17] which underpins Iranian strategic culture and economic development priorities, very likely shapes the development of Iran's AI ecosystem. The Iranian government almost certainly disseminates the narrative that Iran is a competitor in an AI global race and seeks to prove its technological prowess. As a result of Iran's national ambitions for AI, its development ecosystem is very likely government-driven, in partnership with private industry and academia. Iranian technological leaders very likely understand that foreign advances in AI computing power, including private technology companies, can both benefit and augment Iran's own internal efforts and uses. This dynamic — a top-down national strategy and AI technical development framework that is supported rather than driven by Iran's own private sector innovation — is likely to limit the potential of Iran's AI advances.

Iran's own private sector innovation is likely stifled by its economic isolation and its dependencies on government funding and direction. Iran claims that the government's expanded support to the tech sector resulted in a surge of Iranian venture capital firms, accelerators, and "innovation centers" between 2019 and 2020, as these firms provided localized solutions amid global supply chain disruption (after the US withdrew from the Iran nuclear agreement and re-imposed sanctions).[18] [19] However, according to a 2022 United Nations report on Iran's innovation landscape, sanctions

[15] *https://www.tehrantimes[.]com/news/501122/Self-sufficiency-in-equipment-production-a-top-priority-of-Iran*
[16] *https://en.mehrnews[.]com/news/219005/Iran-attains-self-sufficiency-in-repairing-vessels-IRISL*
[17] The goal of Iran's "resistance economy", according to Khamenei, is to "build the economy from within" as a means of reaching Iran's full economic potential while mitigating the impact of foreign sanctions and global economic crises.
https://english.khamenei[.]ir/news/7739/Iran-s-economic-strategy-in-confronting-sanctions
[18] *https://france.mfa[.]ir/files/frfrance/iran.pdf*
[19] *https://en.icro[.]ir/%D8%A7%D8%AE%D8%A8%D8%A7%D8%B1/The-Rise-of-Iran-Startup-Ecosystem-despite-Sanctions/19898*

significantly hampered Iran's "startup ecosystem" and the domestic and foreign appetite for investments in Iranian technology startups after 2018 was "reduced substantially." Iran's challenges and limitations are reflected in several global indices that analyze and measure AI advances and technological innovation across countries. Stanford University's Global AI Vibrancy Tool, which defines AI vibrancy as "the level of activity, development, and impact of AI technologies within a country," does not include Iran in its analysis of 36 countries leading AI-related metrics. Iran is ranked 64th in the Global Innovation Index, which reflects a notable improvement over the last ten years. However, Iran's institutional, regulatory, and business environments ranked 127th, 131st, and 128th, respectively, underscoring the systemic challenges to Iran's innovation ecosystem. Oxford Insights ranked Iran 91st of 193 countries in the 2024 "Government AI Readiness Index," a three-position improvement from its 2023 ranking, but scored lowest in the "vision," "adaptability," and "maturity" dimensions.

In 2022, Iran revealed fifteen policies shaping its AI development roadmap. A key theme underpinning these policies was the importance of national research centers, private industries, and universities working together to advance Iran's AI development. Notably, two of the policies sought to support the private industry's use of "academic plans" and to increase private industry's trust in universities, likely suggesting a divide between Iran's technical industry and its academic institutions.[20] Another key theme of the policies was increasing foreign engagement and cooperation between Iranian and foreign academic centers. This likely reflects Iran's interest in leveraging foreign partnerships, particularly with countries that are adversarial to the West, in the AI field.

In July 2023, a study from the Journal of Science & Technology Policy found that "the artificial intelligence ecosystem in [Iran] has not yet taken shape in the true sense" and "there is still no relative consensus among actors for dividing tasks and missions."[21] Less than a year later, the same journal — which is affiliated with Iran's National Science Policy Research Center — published a Nowruz 1403 (Persian new year, corresponding with March 2024) special edition entitled "Generative Artificial Intelligence: Multiple Perspectives on Opportunities, Challenges, and Implications in Research, Practice, and Policymaking" that examined the "abundant ethical and legal opportunities and challenges" of AI, specifically ChatGPT's "practical, ethical, semantic, and policy challenges." The study's conclusion highlighted the "lack of well-developed ethical guidelines" and noted that it is "vital that new rules be established to govern these instruments, and given their global nature, international coordination is also necessary to maximize their benefits." The 43 "expert" authors from various business and technological fields disagreed about whether ChatGPT should be restricted or legalized in Iran.[22]

Iran's bureaucratic challenges in the AI realm, including changes in presidential administrations and a plethora of organizational stakeholders with overlapping responsibilities, likely limit the country's ability to implement an overarching strategy for its AI development. Tehran's policy toward AI is overseen by Iran's Supreme Council of the Cultural Revolution (SCCR) — a strategic policy body that answers only to the Supreme Leader — whose approval in June 2024 was required to move forward with the National AI

[20] *https://tn[.]ai/2661191*
[21] *https://jstp.nrisp.ac[.]ir/article_13993.html?lang=en*
[22] *https://jstp.nrisp.ac[.]ir/article_14031_bdeb752245048f38ea85cbee197fce86.pdf?lang=en*

Organization, steering council, and the document's "generalities."[23] This approval involved review of the AI organization's statutes and 18,000 supporting documents to ensure the project was not "tainted by Western influence."[24] The SCCR established a specialized Commission for AI in September 2022 composed of officials from all armed forces branches, the General Staff of the Armed Forces, the Office of the Supreme Leader, the Ministry of Intelligence, and the Ministry of Higher Education.[25] In January 2025, Pezeshkian noted the importance of AI development in a meeting with the SCCR, asserting that "any delay or backwardness in the development of AI in Iran would be damaging and irreparable."[26] Domestic critics of Iran's AI policy have raised concerns about the "unstable decisions, constant policy changes, and lack of a clear roadmap" that has hampered the country's AI program.[27] For example, in December 2024, Afshin announced that the cabinet was drafting a charter for the National AI Organization that would focus on the organization's role in planning and overseeing AI activities; three months later, semi-official news agency Tasnim News suggested the possibility that the National AI Organization could be dissolved, raising a "series of contradictions" and "unanswered ambiguity." [28] [29]

AI Budget

Documentation of Iran's investment and funding of AI is opaque, but even with conflicting information, Iran's lack of significant AI funding compared to its competitors will likely imperil its top-ten AI ambitions. The SCCR reportedly allocated a budget totaling 3.5 trillion Tomans ("over 83 million dollars") in its approval; Iran's initial operating budget for AI has also been reported as $50 million USD.[30] [31] According to the Tehran Times, 50 trillion rials ("some $100 million") has been allocated for the development of AI operators during Persian year 1403 (between March 2024 and March 2025).[32] In January 2025, Iran's National Development Fund — independent of the Iranian government budget — agreed to allocate $15.6 million USD to AI projects in universities and private research centers, while another $100 million USD will be provided in the form of loans.[33] These funding numbers lag significantly behind the AI budgets of regional competitors like the United Arab Emirates (approximately $1.2 billion USD) and Saudi Arabia (approximately $2 billion USD).[34] [35]

[23] *https://president[.]ir/en/152414*
[24] *https://cistc[.]ir/en/4936/iran-vice-president-optimistic-about-ai-organization-objectives/*
[25] *https://sccr[.]ir/pro/3296/*
[26] *https://president[.]ir/fa/156530*
[27] *https://fararu.com/fa/news/843663/%D8%B3%D8%A7%D8%B2%D9%85%D8%A7%D9%86-%D9%85%D9%84%DB%8C-%D9%87%D9%88%D8%B4-%D9%85%D8%B5%D9%86%D9%88%D8%B9%DB%8C-%D8%A7%DB%8C%D8%B1%D8%A7%D9%86-%D9%85%D9%86%D8%AD%D9%84-%D8%B4%D8%AF*
[28] *https://cistc[.]ir/en/5361/iran-vice-president-for-science-says-cabinet-drafting-charter-of-national-ai-organization/*
[29] *https://www.tasnimnews[.]com/fa/news/1403/12/23/3273937/%D8%B3%D8%A7%D8%B2%D9%85%D8%A7%D9%86-%D9%85%D9%84%DB%8C-%D9%87%D9%88%D8%B4-%D9%85%D8%B5%D9%86%D9%88%D8%B9%DB%8C-%D8%A7%DB%8C%D8%B1%D8%A7%D9%86-%D9%85%D9%86%D8%AD%D9%84-%D8%B4%D8%AF*
[30] *https://cistc[.]ir/en/4936/iran-vice-president-optimistic-about-ai-organization-objectives/*
[31] *https://wanaen[.]com/iran-among-the-top-20-countries-in-artificial-intelligence/*
[32] *https://www.tehrantimes[.]com/news/505707/Iran-ranked-94th-in-Government-AI-readiness*
[33] *https://nournews[.]ir/en/news/209421/Iran-allocates-$115-million-to-AI-research-activities*
[34] *https://wanaen[.]com/iran-among-the-top-20-countries-in-artificial-intelligence/*
[35] Iranian government or media reporting on the US dollar conversions of Iranian rial or toman budget figures does not always reflect established conversion rates or real purchasing power.

Government Entities

Insikt Group identified a number of government entities that are involved in the direction, strategic planning, and national coordination for the development of Iran's AI capabilities. The protracted process for the formulation of Iran's national AI strategy document, which has involved a cross-agency collaboration process with multiple stakeholders, likely reflects a bureaucratic competition for influence and ownership of AI leadership within the Iranian government. The division of power among various government elements has likely hampered Iran's ability to form a cohesive AI strategy and development plan.

Organization	Role in AI Development
Supreme Council of the Cultural Revolution (SCCR)	• Created following the 1979 Islamic Revolution to ensure Iran's higher education system adhered rigorously to Islamic Revolution ideals[36] • Approves Iran's national AI documents and organization • Established a Commission for AI and Cyberspace among its "specialized committees"[37] • Likely aims to preserve Iran's culture and religious ideals in the development of AI, given its original mandate
Vice Presidency for Science, Technology and Knowledge-based Economy	• Established in 2006 with the SCCR's approval "to support and strengthen the scientific and research activities of elites" and to develop national strategic and prioritized technologies"[38] • Tasked by the Iranian president "to interact with AI specialists in universities, research centers and Parliament" to study "different dimensions of AI," "with the aim of adopting policies and formulating laws"[39] • Likely plays a critical role in implementing Khamenei's vision and directing resources for Iran's AI advancement, driving cooperation among technological experts on national AI-related projects and initiatives[40]
National Artificial Intelligence Organization (or National Organization for AI)	• Under the supervision of the Iranian President • Launched in July 2024, after SCCR's approval of statutes and 18,000 supporting documents[41] • Tasked with "implementing a national AI strategy" and "to provide sufficient resources, with support from the National Development Fund, to create the necessary infrastructure" and "support private companies in developing advanced AI models and algorithms"[42] • Aims to "plan and oversee AI activities rather than directly intervene"[43]
Ministry of Information	• Considered to be the "executive core of artificial intelligence" in Iran[44]

[36] *https://sccr[.]ir/pages/10257/2*
[37] *https://sccr[.]ir/pro/3296/*
[38] *https://en.isti[.]ir/History-of-the-Vice%E2%80%93Presidency*
[39] *https://president[.]ir/en/156536*
[40] *https://cistc[.]ir/en/4979/irans-new-vice-president-for-science-tech-knowledge-based-economy-inaugurated/*
[41] *https://cistc[.]ir/en/4936/iran-vice-president-optimistic-about-ai-organization-objectives/*
[42] *https://newspaper[.]irandaily[.]ir/7602/8/9875*
[43] *https://cistc[.]ir/en/5361/iran-vice-president-for-science-says-cabinet-drafting-charter-of-national-ai-organization/*
[44] *https://www.mehrnews[.]com/news/5412510*

and Communications Technology (ICT)	• A subsidiary, the Information Technology Organization of Iran, is responsible for "facilitating e-services delivery" and "to develop and maintain the country's national information exchange center"[45]
ICT Research Institute (Formerly ITRC)	• Established in 1970 at the University of Tehran • Serves as the main research arm for ICT nationwide, while "customizing and channelizing advanced information technology at industry level"[46]
Artificial Intelligence Innovation and Development Center	• Under the oversight of the ICT Research Institute • Involved in "planning, executing the evaluating and providing quality assurance certification for AI products and services"[47] • Includes specialized "laboratories" for the development and evaluation of AI products and services, including machine vision and image processing, text and natural language processing, speech and audio processing, biometrics, data processing, and cognitive science
National Cyberspace Center	• Monitors and directs the activities of various organizations, including the Vice Presidency's efforts "for employing innovative technologies in the virtual space, such as artificial intelligence, blockchain, quantum computing, and data science"[48]

Table 1: *Iranian entities involved in AI strategy (Source: Recorded Future)*

Iran's military plays a key role in technological developments through civil-military cooperation, which very likely extends into the AI realm. Iranian armed forces, including the Islamic Revolutionary Guard Corps (IRGC), have affiliated universities and science and technology (S&T) parks and run their own technology parks as "incubators." For example, Imam Hossein University — affiliated with the IRGC — has a technology center and hosted "The International Conference on Artificial Intelligence and the Future Civilization" on January 29, 2025. Iran's military branches from the Army and IRGC's ground, naval, and air forces each have their own research and development entity, referred to as a Research Self-Sufficiency and Jihad Organization (RSSJO), that conducts specialized and tailored R&D for the unique needs of their respective forces. These RSSJOs are likely involved in independent efforts in defense-related R&D and in cooperation with academic institutions; they are likely integrating AI development into those efforts. Iran's Ministry of Defense and Armed Forces Logistics (MODAFL) also likely has a key role in defense-related AI development, having signed partnership agreements with 80 universities and 800 industrial towns in Iran.[49]

Government Initiatives

Announcements by the Vice Presidency for Science, Technology and Knowledge-based Economy regarding its AI development initiatives likely suggest Iran is working to develop a sovereign AI capability — meaning an Iranian national capability to produce AI using its own infrastructure, data, workforce, and business networks through the development of foundation models trained on local

[45] *https://en.ito.gov[.]ir/AboutUs*
[46] *https://en.itrc.ac[.]ir/page/itrc-glance*
[47] *https://en.itrc.ac[.]ir/page/ai-labratories*
[48] *https://filter[.]watch/english/wiki/islamic-republic-of-irans-strategic-cyberspace-document-objectives-and-major-actions/*
[49] *https://www.irna[.]ir/news/84968285*

datasets that reflect local language and culture. Hossein Afshin, Iran's Vice President for Science, Technology and Knowledge-based Economy, hosted a meeting with the "Technology Group" from Tarbiat Modarres University on December 1, 2024, during which he reviewed the team's progress, requirements, and support mechanisms for its "Project for Designing a Large Native Iranian Language Model."[50] He subsequently announced on December 3, 2024, that a prototype of Iran's "national AI operating system," which was "designed to host AI algorithms locally," was expected in six months.[51] Iran intends to launch the country's first GPU data center by 2025 and plans to establish its first AI park — to "showcase the technological developments of the country and provide practical AI-related services to the people" — within the next two years.[52]

On March 15, 2025, Vice President Afshin unveiled Iran's national AI platform and announced a phased rollout of the project, framing it as a strategic move in a global "war of chips and algorithms."[53] The platform's initial testing and optimization are planned for the first half of 2025, followed by limited access for technology experts and companies in the third quarter, a public beta release in September 2025, culminating with a public release in approximately March 2026.[54] Over 100 Iranian professors and researchers collaborated on the project, which was developed in cooperation with Sharif University of Technology — an institution that is sanctioned for its links to the IRGC and MODAFL related to military and ballistic missile technology development.[55] [56] An expert developer and representative of Sharif University, Hossein Asadi, noted that the AI platform was developed using an open-source framework and specifically highlighted that it would be "entirely independent, with no reliance on foreign APIs [application programming interfaces]," ensuring the platform's services would continue without disruption "even if the country's internet were to be completely disconnected."[57]

Iran almost certainly seeks to leverage domestic resources to support these development initiatives. On December 13, 2024, Afshin declared the government's intention to jumpstart domestic chip production for AI through the "Sahand National Project" ("پروژه ملی سهند").[58] The Sahand National Project is consistent with Iran's focus on leveraging its own human and natural resources to deliver indigenous technological solutions and is likely a reaction to an anticipated increase in economic isolation under the US presidential administration of Donald Trump. The US government announced export restrictions on January 13, 2025, which are designed to curtail the sale of chips with high-computational graphics processing unit (GPU) power for AI advanced development (such as Nvidia's A100 and H100 chips) to sanctioned countries like Iran.

According to Iranian media, the project's aim is to manufacture "nine-nines" (99.9999999%) purity silicon wafers, the first step in setting up a domestic supply chain for microchips, with a view to open

[50] *https://en.isti[.]ir/News%E2%80%93Archive/The-Vice-Presidency-support-the-development-of-a-large-indigenous-language-model/101074*
[51] *https://iranpress[.]com/iran-announces-ambitious-ai-and-tech-plans*
[52] *https://www.tehrantimes[.]com/news/509029/Iran-s-first-AI-park-to-be-set-up-in-two-years*
[53] *https://www.iranintl[.]com/en/202503158253*
[54] *https://en.isti[.]ir/news/Iran-is-on-the-AI-development-train%E2%81%84Full-public-access-to-the-national-AI-platform-next-year*
[55] *https://www.presstv[.]ir/Detail/2025/03/17/744561/Iran-homegrown-AI*
[56] *https://www.iranintl[.]com/en/202503158253*
[57] *https://wanaen[.]com/iran-unveils-first-national-ai-platform-prototype/*
[58] *https://iranpress[.]com/iran-announces-ambitious-ai-and-tech-plans*

Iran's first GPU data center by "early 2025."[59] While public information on the project remains limited, its reported location — in Sahand, East Azerbaijan province — would likely have been chosen for its proximity to Sahand Industrial Group (SIG), Iran's leading glass and silica producer, and the Sahand University of Technology, which has specialized laboratories in material and nanomaterial engineering.[60] Using satellite imagery, Insikt Group identified a new two-million-square-foot facility under construction near an existing SIG silica manufacturing plant in Sahand, showing significant investment in the region's industrial capabilities.

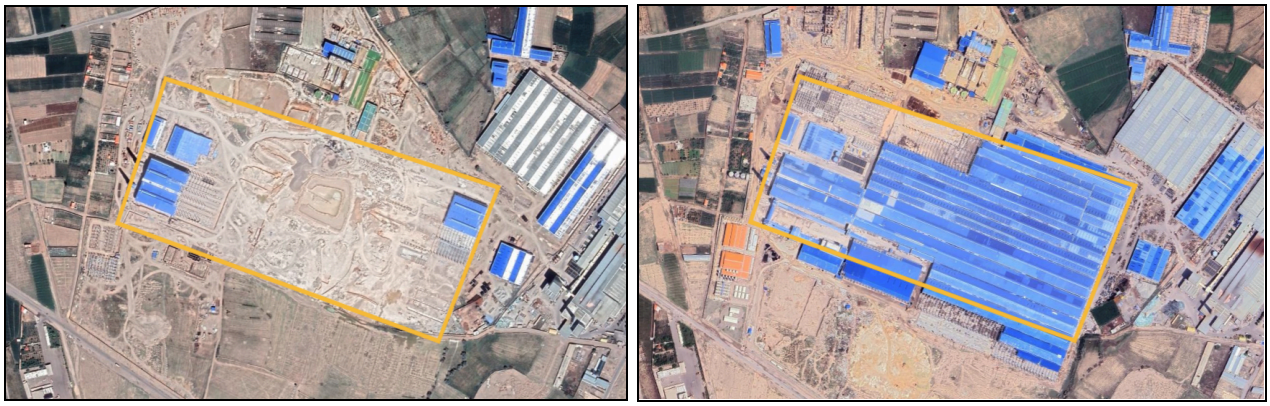

Figure 4: *Satellite imagery of a two-million square foot facility between May 2020 and May 2024 near an SIG silica plant in Sahand, East Azerbaijan, Iran (Source: Google Earth)*

Another government initiative announced on January 11, 2025, by Afshin aims to establish a hub for AI innovation in the oil and gas industries on Kish Island, Southern Iran, in association with the Persian Gulf Petrochemical Industries Company and the Kish Free Zone Organization.[61] The location choice likely enables the Iranian government to unlock three benefits for the acceleration of AI development: the Kish Free Zone's lax foreign investment and fiscal policies to encourage foreign direct investments (FDI);[62] existing infrastructure, including an international airport and ports that can be leveraged for international transit; and lax entry visa requirements on Kish Island that enable reputable Iranian academic institutions (such as Sharif University of Technology, which has an international campus in Kish) to attract foreign talent and investment.

Iran has announced several AI-enabled tools for the benefit of the Iranian government and society. Alongside his announcement of Iran's domestic chip production project in December 2024, Afshin also declared that the Iranian government has prioritized the development of "AI assistants" available to government officials, developed "in collaboration with universities" with a team of over "70 expert professors."[63] The AI assistants are reportedly expected to help government ministers to "extract both laws and regulations and production-related issues from data" and "make suggestions in decision-making." In August 2024, Iran's National Cyberspace Center announced the Arbaeen Artificial Intelligence Assistant (which references Arbaeen, a Shi'ite holy day, during which Shi'a Muslims make a

[59] *https://ana[.]ir/fa/news/944409/%C2%A0پروژه-ملی-سهندبرای-ساخت-تراشه-هاتوافق-معاونت-علمی-و-بانک-مرکزی-بر-سر-قانون-رمزارز*
[60] *https://www.sut.ac[.]ir/mat/en/page/175/labs-and-centers*
[61] *https://en.shana[.]ir/news/652592/AI-center-for-oil-gas-industries-to-be-built-on-Kish-Island*
[62] *https://www.tehrantimes[.]com/news/495046/Commodities-worth-168m-exported-from-Kish-Free-Zone-in-10-months*
[63] *https://irannewspaper[.]ir/8622/1/107892*

pilgrimage to Iraq) was "a guide for pilgrims to access routes and processions, management of information for scheduling ceremonies and events, as well as the status of health and medical services, weather conditions, and even cultural and linguistic guidance online."[64] In November 2024, Iran's national religious headquarters, located at Qom Seminary, launched an "indigenously developed platform that uses AI to answer questions and remove doubts on religious issues."[65] Dubbed Deendaan, the platform was introduced by the seminary's National Center for Answering Religious Questions. Another entity in Qom, the Noor Computer Centre for Islamic Sciences Research, is seeking to incorporate AI in its use of religious texts and data to "accelerate the Islamic studies of senior clergy and speed up their communication to the public."

Academia

Iran's most globally recognized AI innovation, the Surena IV humanoid robot, was developed by Iran's academic sector, underscoring the key role of universities and research institutes in Iran's AI ecosystem. Created at the Center of Advanced Systems and Technologies (CAST) at the University of Tehran, the robot's fourth generation uses the "Robot Operating System" for "state monitoring, real time implementation of algorithms, and simultaneous running of several programs."[66] The robot was listed as one of the top ten humanoid robots in 2020, according to the American Society of Mechanical Engineers. In addition to developing the Surena humanoid, CAST has a "portfolio" of projects related to various fields, including "mechatronics, robotics, and intelligent systems inspired by nature," as well as "aquatic inspired" robots and those "inspired by birds."[67]

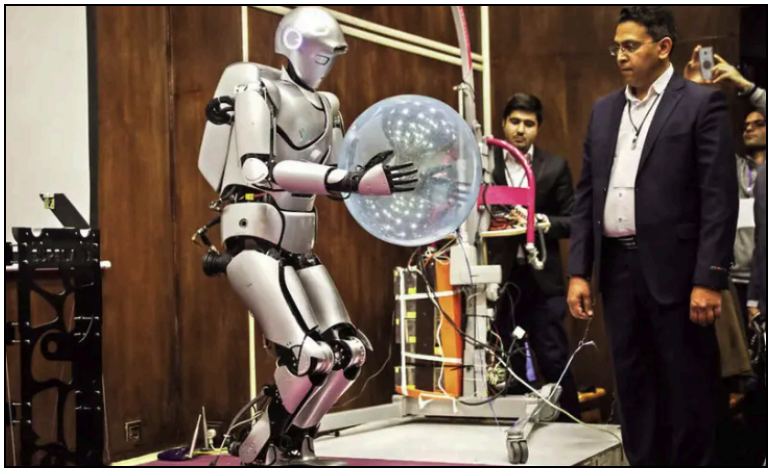

Figure 5: *Surena IV, developed at the University of Tehran (Source: IEEE)*

Leading Iranian universities in the field of AI include the University of Tehran, Amirkabir University of Technology, and Iran University of Science and Technology, all located in Tehran. According to the state-run news outlet Tehran Times, over the last ten years, the most "scientific productions" in artificial intelligence have been associated with Tehran University, Tabriz University, and Amirkabir University of

[64] *https://sahandkhabar[.]ir/goto/?key=99347641*
[65] *https://iqna[.]ir/en/news/3490748/ai-platform-for-religious-queries-to-be-launched-in-qom*
[66] *https://surenahumanoid[.]com/surenaIV.html*
[67] *https://cast-tech[.]ir/robotic-portfolio/*

Technology.[68] However, these universities likely remain low on global rankings for AI research; the University of Tehran, widely recognized as the best higher education institution in Iran, ranks at number 201 globally for AI. Edurank data suggests that Iran's top three universities are ahead or on par with their Russian peers (Moscow State University, St. Petersburg State University, and the National Research University) but far behind China (Tsinghua University, Harbin Institute of Technology, and Shanghai Jiao Tong University) in terms of production (number of publications) and influence (number of citations). Iranian national investment in AI research is likely less than Russian investment, but its academic citation numbers are greater than Russia's, likely reflecting that Iran's AI academics maintain disproportionate influence in their field relative to their Russian counterparts.

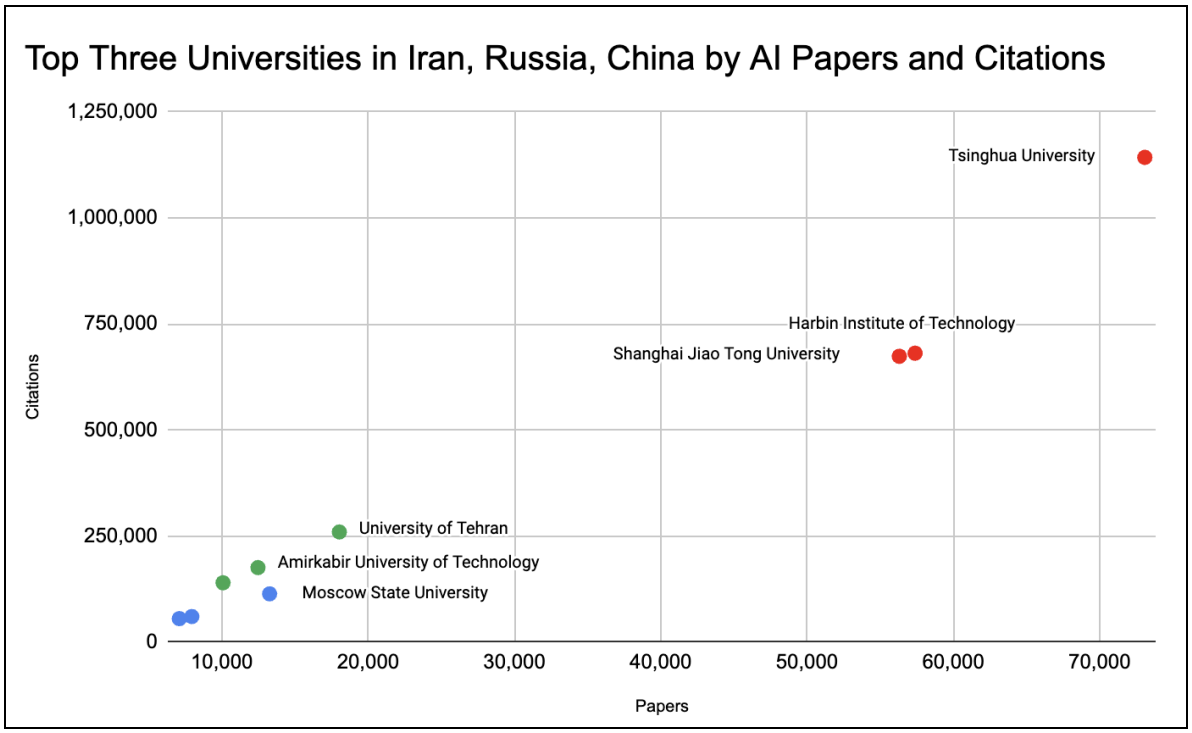

Figure 6: *Top three universities in Iran, Russia, and China by papers and citations in the field of AI (Source: Edurank)*

In the absence of a vibrant private AI sector, the Iranian government is likely reliant on academics specialized in AI for government projects at the expense of cutting-edge research. Iranian media boasted that "70 expert professors" were working to design an AI platform for government ministers.[69] Sharif University of Technology, ranked fourth in Iran in AI, is likely a key partner for government projects, such as Iran's national AI platform.[70] The government demand for expertise likely represents a misallocation of research talent towards state-mandated engineering projects, which likely impedes Iran's research potential. However, Iranian academic centers may also be exploring open-source AI development, which likely encourages innovation. For example, in November 2024, Amirkabir University, in collaboration with AI developer Part AI, announced the development of the "most comprehensive and powerful evaluation system for Persian language models," known as Open Persian

[68] *https://www.tehrantimes[.]com/news/505707/Iran-ranked-94th-in-Government-AI-readiness*
[69] *https://irannewspaper[.]ir/8622/1/107892*
[70] *https://cistc[.]ir/en/5494/sharif-university-natl-petrochemical-company-to-advance-ai-in-oil-petrochemical-industries/*

LLM Leaderboard, which includes over 40,000 samples and tracks the performance of 25 major open-source models at Persian-language tasks.[71] Part AI has also published six open-source models, including Persian finetunes of Meta's Llama 3.1 and Google's BERT models.

A search of recent and upcoming conferences related to AI suggests Iran's academic sector is exploring AI applications in several sectors, including medical sciences, telecommunications, electrical engineering, education, mining, and industry.[72] In 2024, Iran held a number of inaugural national conferences on specific topics, very likely suggesting the concept of how AI can benefit specific industrial sectors is still nascent in Iran. For example, in October 2024, Iran held the first national conference on AI in education and learning; in May 2024, Iran held its first national conference on AI and the Internet of Things; in April 2024, it held its second national conference on Digital Transformation and Intelligent Systems.

Figure 7: *Poster of international AI conference which notes the cooperation "with prestigious universities and scientific centers of Iran and the world" (Source: Imam Hossein University[73])*

Iranian universities are very likely driving international engagement by hosting conferences on AI. A review of international AI-related conferences held in Iran in 2024 and planned for 2025 highlights a

[71] *https://irangov[.]ir/detail/453401*
[72] *https://www.en.symposia[.]ir/ListScience/PS0606*
[73] *https://icai.ihu.ac[.]ir/en/page.php?rid=62*

wide range of foreign academic participants, including academics from Austria, Australia, Canada, China, France, Italy, Iraq, Malaysia, Russia, Spain, Vietnam, and the United Kingdom.[74] [75] [76] Iranian academic output on AI likely benefits from strong ties with Iranian-American researchers and collaboration with US academic institutions. An Iranian study of domestic output of AI research between 1978 and 2022 found that US researchers were the most frequent international co-authors on Iranian AI research.[77] However, Iranian academic AI research likely remains of limited international influence. 19.9% of Iranian AI papers during this period received no citations, with the majority receiving between one and five citations.

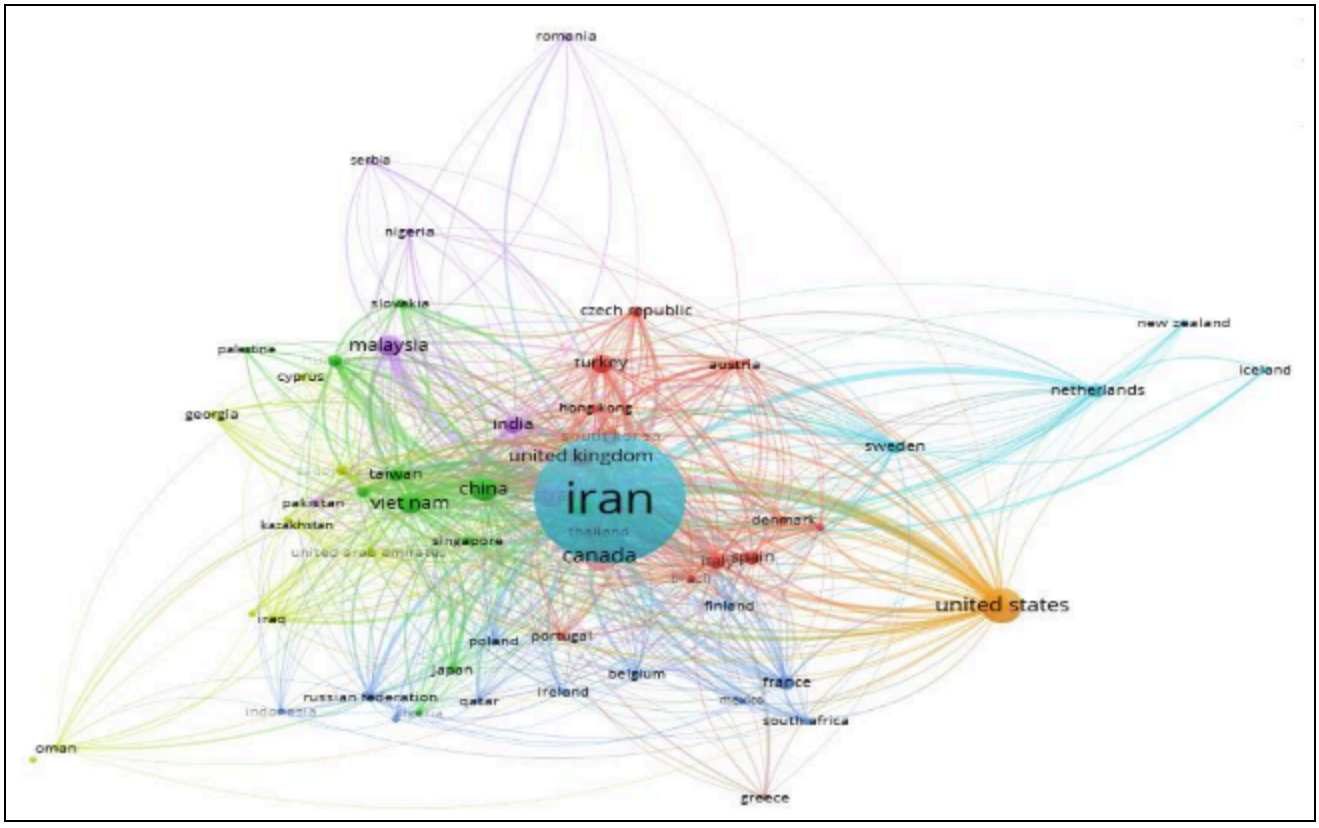

Figure 8: *Network map of countries co-authoring with Iranian AI researchers between 1978 and 2022, based on the Scopus database (Source: Shahed University[78])*

Private Technology Companies

Iran's private sector currently faces significant challenges in the face of international sanctions and lack of global competitiveness, including the inability to retain top talent, the absence of foundational AI model companies, low capital expenditures on AI by existing major players in the technology sphere, and a nascent venture capital (VC) ecosystem.

[74] *https://iai-conf[.]ir/Home/Content/13*
[75] *https://icai.ihu.ac[.]ir/en/page.php?rid=62*
[76] *https://aisoft24.shirazu.ac[.]ir/fa/page.php?rid=60*
[77] *https://rsci.shahed.ac[.]ir/article_3903.html?lang=en*
[78] *https://rsci.shahed.ac[.]ir/article_3903.html?lang=en*

Iran almost certainly suffers from a significant talent outflow of skilled workers in technology and AI. According to a 2021 report by the Iran Migration Observatory, 50% of Iranians involved in startup communities and 44% of graduates were planning on emigrating, citing unpredictable internet regulations, censorship, and lack of wage competitiveness as direct factors. In December 2024, Iran's Vice President Afshin announced a new regulation offering monthly grants of approximately 15 million Tomans ($3,564 USD) for PhD students to encourage research and scientific activities, stressing the importance of preventing talent migration.

Despite talent shortages, Indian data provider TraxCN has identified at least 85 companies in Iran advertised as operating in the field of AI, with a majority focusing on developing AI enterprise applications and tools for healthcare, agriculture, and finance. Several companies provide chatbot services and LLMs, including Persian-language chatbots; however, it remains unclear whether they are developing proprietary models rather than deploying existing open-source models. Additionally, TraxCN considers that seventeen (20%) of these companies are currently "deadpooled" (no longer in business) and 60 (80.5%) remain unfunded, indicating that despite government efforts to incentivize AI startups, the average Iranian AI startup is doomed to fail in raising funds or operating sustainably. Iranian AI website Hooshio published a list of 29 Iranian AI companies, highlighting the Parth AI Research Center as "one of the top five companies in the Middle East" with more than 150 specialists in AI.[79] The company claims to have Iran's "biggest AI research center" with a department for machine vision, natural language processing (NLP), speech processing, and data analysis, as well as an AI college.[80]

Iran's private tech sector is likely trying to financially motivate AI innovation and engage with Iran's developer community. Digikala, Iran's biggest technology and e-commerce company (valued at approximately $500 million USD as of August 2024), hosted an AI hackathon in March 2024 with a first-place prize of 60 million Tomans (approximately $14,258 USD).[81] Notably, the hackathon's rules banned participants from using Western AI models (listing models from Western companies like OpenAI, Anthropic, and Cohere), likely intending for participants to focus on using open-source models for hackathon entries.

Unlike their Western and Chinese counterparts, Iranian VC funds are likely limited in their ability to fund and support a domestic AI startup ecosystem to fulfill national security and economic priorities, with startups forecasted to raise $28.13 million USD in capital in 2025 across all sectors. Iran's Pardis Technology Park (PTP), dubbed "Iran Silicon Valley" and operating "under the auspices of" the Vice Presidency for Science, Technology, and Knowledge-based Economy, is "the most significant center for developing startups and knowledge-based companies and commercialization of technology and innovations in Iran."[82] PTP, which is part of the Iran International Innovation District, boasts 25.5 million

[79] *https://hooshio[.]com/شرکت-های-چند-حوزه-ای-هوش-مصنوعی-در-ایران/*
[80] *https://partdp[.]ai/en#Home*
[81] *https://app.dealroom[.]co/companies/digikala*
[82] *https://en.iiid[.]tech/pages/organization*

EUR of foreign investments in its companies over the last five years and is also supported by the Iran National Innovation Fund, Iran's version of a venture capital and private equity firm.[83] [84]

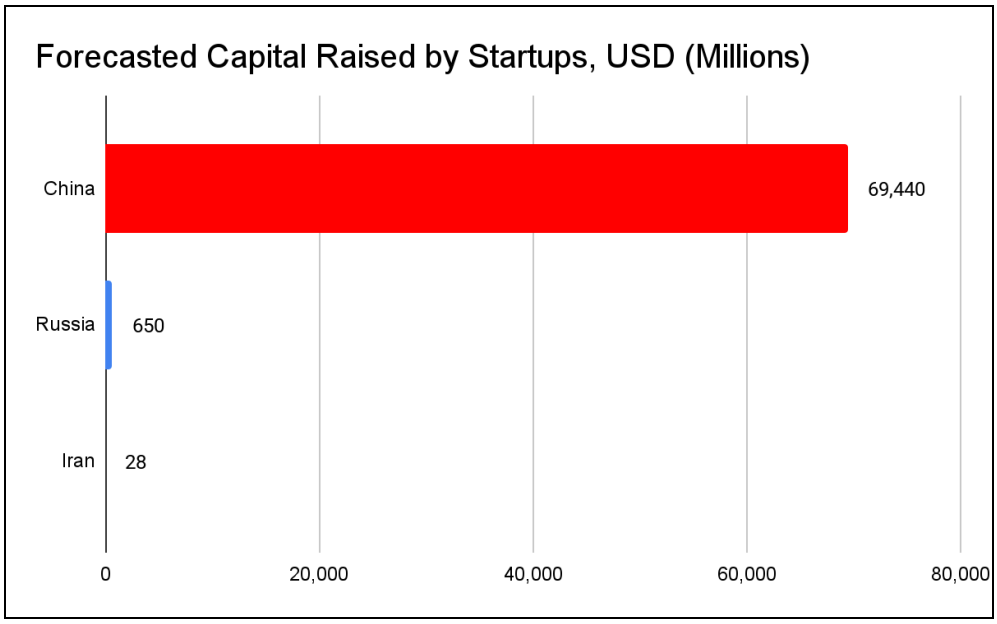

Figure 9: *Forecasted capital raised by startups for 2025 in China, Russia, and Iran (Source: Statista 1, 2, 3)*

Open Source

Open-source communities play an important role in the development of AI capabilities, as open-source AI models can lower research and development costs, present opportunities for technology transfers, and reduce dependency on models developed by foreign companies. Iran's open-source community almost certainly lags behind in terms of developing home-grown AI models, finetunes, and datasets. Data from open-source AI model platform HuggingFace shows that Farsi-language models (including multilingual models from US AI companies) are outnumbered by open-source models with language capabilities for Mandarin, Korean, or Russian. Sanctions are almost certainly throttling the emergence of a strong Iranian open-source software community. GitHub, a major platform for hosting open-source code, was blocked in Iran in 2019 and only resumed operations in 2021 after securing a special license from the US Department of the Treasury's Office of Foreign Assets Control (OFAC) board.

[83] *https://en.iiid[.]tech/pages/foreign-investment*
[84] *https://ir.linkedin[.]com/company/iran-national-innovation-fund*

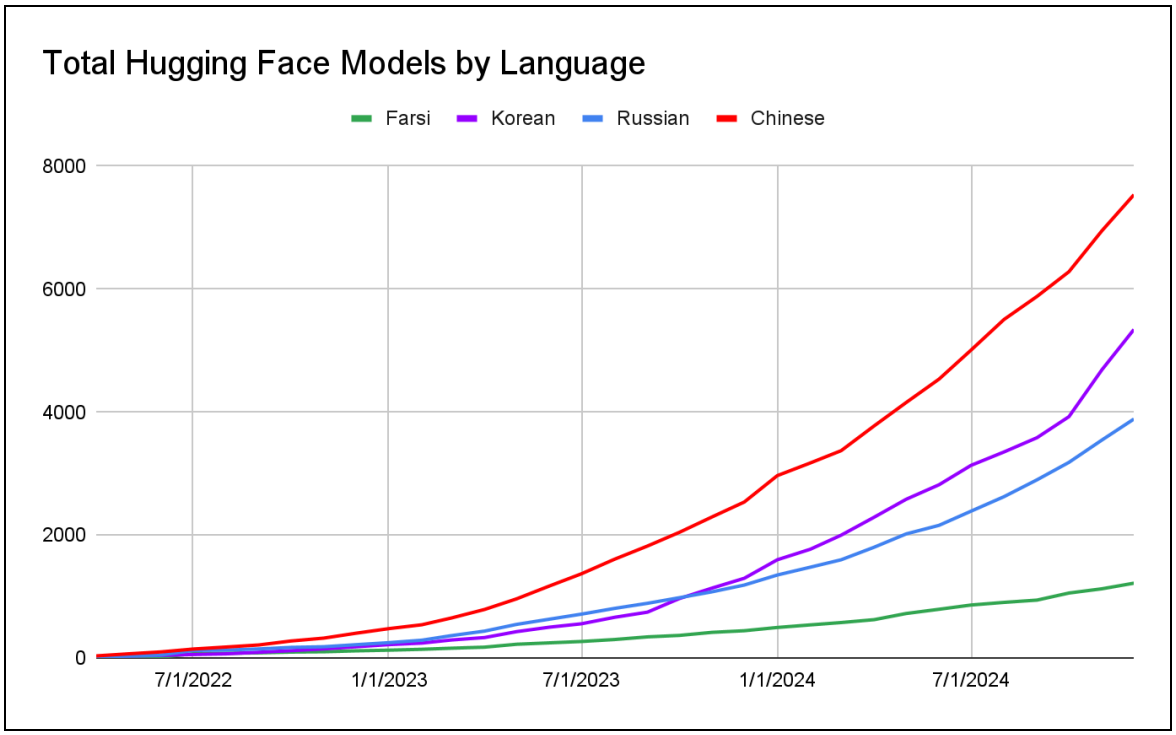

Figure 10: *Number of models published on HuggingFace with language capabilities in Farsi, Russian, Korean, and Chinese (Source: HuggingFace)*

Iran's biggest open-source AI contributor, measured by the number of Farsi-language AI models published on Hugging Face, is likely Hezar AI, followed by Persian NLP and Hooshvare Research Lab. US technology companies Facebook and Google are also among the top ten publishers of Farsi-language models on HuggingFace.

Foreign Cooperation

Iran's Organization for Development of International Science and Technology Cooperation (ODISTC) very likely plays a critical role in facilitating the exchange of ideas, goods, and services related to AI. ODISTC was set up "to serve as a foundation for increasing scientific, technological and innovation communications with other countries, as well as securing a significant share of the regional and global trade of knowledge-based products."[85] Among the services offered in ODISTC's "Technological Exchange Office" is "bilateral scientific and technology cooperation in the form of joint research funds with the [sic] countries like China and Russia."[86] More details pertaining to Iran's cooperation with China and Russia are discussed below.

China

Iran's technological cooperation with China is very likely a key strategic interest for Iran's AI development. In 2021, Iran's Strategic Council on Foreign Relations promoted building relationships

[85] *https://cistc[.]ir/en/about-us/*
[86] *https://cistc[.]ir/en/1254/technology-exchanges/*

between Iranian and Chinese technology companies and higher education institutions.[87] AI was specifically mentioned as part of the Iran-China 25-year Comprehensive Partnership, officially signed in March 2021.[88] A leaked version of the plan, sourced from Iran's Ministry of Foreign Affairs and reported by the Wilson Center, proposed the cooperation involved "introducing joint pilot projects in the fields of smart technology and artificial intelligence." Second to the sale of its oil to China, Iran likely views AI development and technological exchanges as a top priority for its bilateral relations with China, and China's challenge to US dominance in AI development aligns with Tehran's goal to oppose US hegemony.

China's use of AI for surveillance and monitoring has very likely been the most robust area for Iran's foreign AI engagement, enabling Chinese companies to expand their export of specific technologies that facilitate Iranian domestic repression. However, academic and research collaboration is very likely another key area in which Iran's technology sector is benefitting from the relationship with China. In November 2024, Iranian company Bayan Rayan — the country's only server producer — received an award at the 26th annual China Hi-Tech Fair (CHTF) 2024.[89] In 2022, an official at Iran's Islamic Azad University touted the Iran-China agreement as a "golden opportunity to boost cooperation in AI" and benefit from Chinese advancement in the AI field, noting that Iran had 3,000 Iranian students studying in China.[90]

Russia

The anti-West strategic alignment and commercial isolation that Iran and Russia both share, particularly as a result of Russia's war with Ukraine, has resulted in deeper cooperation in many security-related fields. Despite the increased cooperation in several spheres, specific details on the extent of the current Iran-Russia collaboration on AI R&D are limited. In January 2025, Tehran and Moscow signed a comprehensive twenty-year strategic partnership agreement that reinforced areas of ongoing cooperation in the technical sphere, including information and communication technologies, digital development, and higher education.[91] While the text of the agreement does not specifically mention AI, Iran's Ministry of Foreign Affairs stated the agreement "provides a platform for sharing knowledge and collaboration in fields such as nanotechnology, aerospace, artificial intelligence, and medical sciences" and expands cooperation at the government and academic levels.[92]

Leading up to the 2025 comprehensive agreement, a flurry of Iran-Russia cooperation documents and engagements have promoted cooperation on AI. In March 2024, the two countries signed a Memorandum of Understanding to cooperate on ethics in AI, "exchanging experiences in the implementation of the ethical principles of AI."[93] The agreement specified that the Russian Commission on Ethics in AI would provide training for Iran's AI and Robotics Development headquarters. In November 2019, Russia and Iran signed a Memorandum of Understanding on cooperation to support

[87] *https://www.scfr[.]ir/en/economy/132206/opportunity-for-technological-development-in-iran-china-strategic-cooperation/*
[88] *https://www.tehrantimes[.]com/news/459726/Senior-MP-Iran-China-cooperation-plan-is-a-win-win-game*
[89] *https://cistc[.]ir/en/5302/iranian-tech-firm-honored-at-china-hi-tech-fair-2024/*
[90] *https://en.mehrnews[.]com/news/183274/Iran-China-to-cooperate-on-artificial-intelligence*
[91] *https://irangov[.]ir/detail/456479*
[92] *https://en.mfa[.]ir/portal/newsview/759843*
[93] *https://www.tehrantimes[.]com/news/495933/Tehran-Moscow-to-cooperate-on-AI-ethics*

twenty joint research plans in fifteen scientific fields, including, among others, information technology, computer systems, and AI.

Using AI to Attain National Security Objectives

In a September 2024 article entitled "Geopolitics of Artificial Intelligence: Theoretical Roadmap for Algorithmic Competition of World Actors," Iranian researchers concluded that "artificial intelligence and algorithmic systems ... and the use of its military, security, political, geo-economics and geocultural functions have a significant impact on the promotion, evolution, and power of international actors."[94] Iran has very likely embraced this view in striving to implement AI in four key elements of its national security apparatus: cyberattacks, foreign influence operations, military and intelligence systems, and domestic surveillance, indicating that Iran's national security objectives have almost certainly been a key driver for Iran's AI development and implementation.

Cyber Attacks

Iranian advanced persistent threat (APT) actors are almost certainly using AI models to assist with offensive cyber operations. Insikt Group initially predicted threat actors such as Iran would use generative AI for cyber attacks in March 2024, and AI industry and cybersecurity reports have since validated this threat. AI tools will likely enhance Iran's phishing attack communications, enabling more personalized targeted outreach, more legitimate and effective personas, and content that is linguistically and culturally convincing. As a result, AI will likely give Iranian attackers an advantage in manipulating targets, making automated detection and human vigilance less effective.

In an October 2024 report, OpenAI highlighted how CyberAv3ngers, a threat actor affiliated with the IRGC, used ChatGPT accounts in planning and preparing attacks targeting industrial control systems (ICS) and programmable logic controllers (PLCs) used in water, manufacturing, and energy systems. The Iranian threat actor used ChatGPT to conduct reconnaissance, enhance scripting techniques, research potential target vulnerabilities, evade anomaly detection, and assist post-compromise activity. Specifically, OpenAI observed CyberAv3ngers asking its model about:

- Default username and password combinations for various PLCs
- Recently disclosed vulnerabilities in three specific software systems
- Scanning a network and zip files for exploitable vulnerabilities
- How to obfuscate Visual Basics for Applications (VBA) script and a provided code

In the same report, OpenAI highlighted Iran-based threat actor Storm-0817's use of its models for assistance in developing a "relatively rudimentary" Android malware. Specifically, Storm-0817 queried OpenAI's models for support in "debugging and coding," including how to develop "server-side code" and "scrape Instagram profiles via the Selenium webdriver." Storm-0817 also used ChatGPT to translate the LinkedIn profiles of employees belonging to two Pakistani cybersecurity organizations. In both

[94] *https://journal.iag[.]ir/article_143237.html?lang=en*

cases, OpenAI concluded that the Iranian groups' use of its models "only offered limited, incremental capabilities that are already achievable with publicly available, non-AI powered tools."

According to Google Threat Intelligence Group (GTIG), "over 10" Iranian state-sponsored cyber threat actors, including APT42 (which overlaps with activity tracked by Insikt Group as GreenBravo and GreenCharlie), used Gemini models for "conducting reconnaissance on defense experts and organizations, and generating content with cybersecurity themes." Reconnaissance targets reportedly also included defense and government organizations in addition to "topics related to Iran-Israel proxy conflict," research into US-made weapons systems such as F-35 fighter jets, unmanned aerial vehicles (UAVs), and anti-drone systems, in addition to Israeli missile defense systems. APT42, which operates on behalf of the Islamic Revolutionary Guard Corps Intelligence Organization (IRGC-IO), also used Gemini to generate tailored phishing lures for a US defense organization.

Furthermore, according to a US government and Israel National Cyber Directorate joint advisory, Iranian threat group Emennet Pasargad (also known as Cotton Sandstorm), operating under the company name Ayandeh Sazan Sepher Aria (also reported as Aria Sepehr Ayandehsazan, or ASA), incorporates AI-related services into its operations, including Remini AO Photo Enhancer, Voicemod, and Murf AI. Operating under the company name ASA, Cotton Sandstorm is likely posing as a legitimate IT services company as a front to gain access to LLM services.

An indispensable element of Iran's cyber capabilities is its social engineering. According to a report by the Canadian Centre for Cyber Security, Iranian cyber threat actors "are particularly sophisticated in social engineering and in using it to enhance their spear phishing capabilities," including through "creating compelling personas" and "using enticing or emotive lures." Iran's integration of AI into its tactics, techniques, and procedures (TTPs) will likely amplify its affiliated cyber threat actors' capabilities and increase the sophistication of their social engineering. For example, in October 2024, Emennet Pasargad impersonated the Israeli National Cyber Directorate (INCD) with a message urging the targeted Israeli organizations to update their Chrome browsers immediately. The phishing email (**Figure 11**) contained two spelling and grammar errors, and the syntax it used to describe the consequences of neglecting the email was awkward. With the help of AI, the translation and nuances of English or Hebrew text can likely be improved, making Iranian phishing emails more effective in convincing the targeted audience of their legitimacy. Gil Messing, chief of staff for the Israel-based company CheckPoint Software, claimed Iran's efforts to translate and use English, or another local language, in social engineering have greatly improved. This improvement has coincided with the widespread availability and use of LLMs such as ChatGPT, which has likely improved Iranian phishing attack content with the support of AI translations.

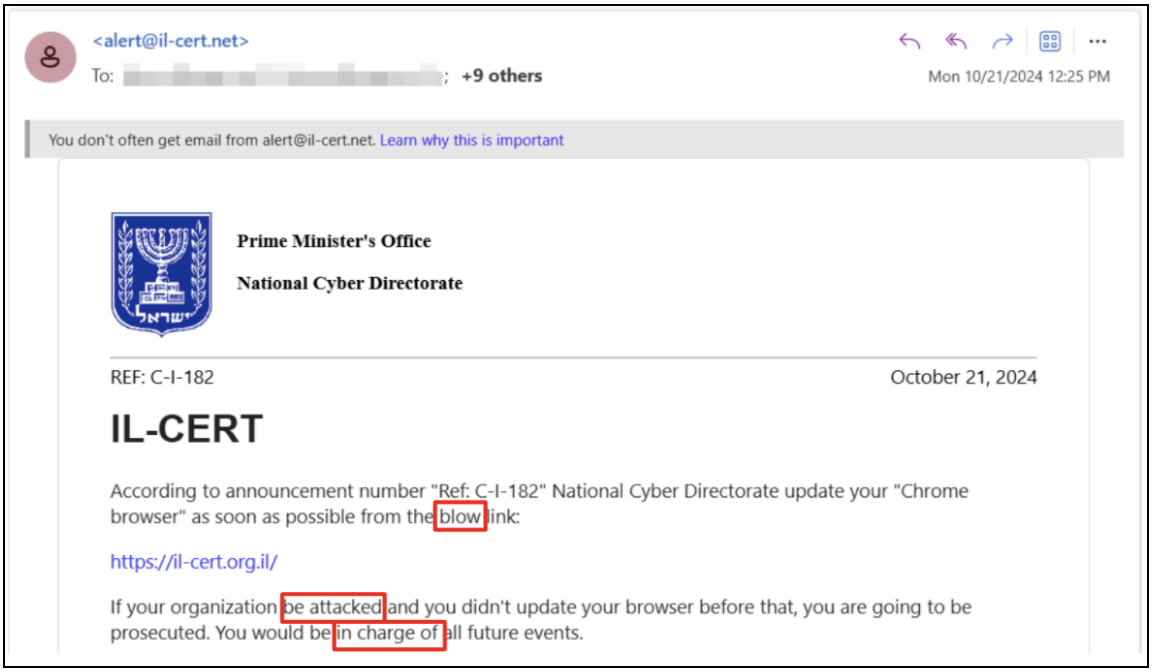

Figure 11: *Example of a phishing email sent to Israeli organizations with grammar and spelling errors highlighted in red (Source: Recorded Future, CheckPoint)*

In addition to offensive cyber capabilities, Iran's National Passive Defense Organization (NPDO) has also prioritized employing AI across all systems involved in national cyber defense. According to NPDO's leader, Brigadier General Gholamreza Jalali, 35% of cyber attacks on Iran's infrastructure used AI.[95] Recognizing this reality, the NPDO, which is tasked primarily with a mission to "deter, prevent, deny, identify, and effectively counter any cyberattack against … Iran's national infrastructure by either hostile foreign states or [domestic] groups supported by them," has embarked on an effort in coordination with academic and technology start-ups to integrate AI into Iran's cyber defense strategy.[96]

Influence Operations

Iran is almost certainly using AI to enhance its influence operations against adversaries, including foreign governments and populations. AI very likely assists Iran's ability to generate influence content that is linguistically and culturally accurate as it relates to a specific target audience; it also very likely assists its ability to identify these specific targets. Iran has used AI for at least two influence operations objectives: for influencing foreign elections and political processes and for disseminating content that supports Iran's "resistance" against Israel and regional adversaries.

Elections and Political Processes

In August 2024, OpenAI reported it identified and disrupted an Iranian influence campaign that used ChatGPT to generate content to influence the 2024 US elections. The Iranian state-sponsored influence operations network Storm-2035 used ChatGPT to generate social media comments and political news

[95] *https://www.tasnimnews[.]com/fa/news/1402/08/22/2987992*
[96] *https://www.tasnimnews[.]com/fa/news/1402/08/06/2979607/*

articles. According to OpenAI, Storm-2035 published content related to both progressive- and conservative-leaning perspectives. The social media commentary included at least one dozen accounts across multiple mainstream social media platforms, in both English and Spanish. Iran used AI to publish content on at least five websites masquerading as news outlets, including *niothinker[.]com*, *savannahtime[.]com*, *evenpolitics[.]com*, *teorator[.]com*, and *westlandsun[.]com*.

According to Microsoft, the websites' operators "are likely using SEO [search engine optimization] plugins and other generative AI-based tools to create article titles, keywords, and to automatically rephrase stolen content in a way that drives search engine traffic to their sites while obfuscating the content's original source." Storm-2035's AI-generated content very likely seeks to increase US domestic polarization by exploiting pre-existing ideological wedge issues, including by supporting and opposing "US presidential candidates, LGBTQ rights, and the Israel-Hamas conflict." A US official with the Office of the Director of National Intelligence (ODNI) also identified immigration as an issue Iran has manipulated using AI tools "because they perceive it to be a divisive issue" and "identify themes with which they think will create further discord in the United States."

According to OpenAI's report, Iran's use of AI-generated content in the 2024 presidential election did not achieve "meaningful audience engagement" and was part of a larger influence campaign that also used non-AI political cartoons and videos. The ineffectiveness of the AI-generated content likely reflects Iran's nascent capabilities, which date back to the 2020 election. According to current and former US officials, the Iranian government prepared AI-generated deepfakes in the final weeks of the 2020 election. These US officials did not comment on what was depicted in the deepfakes or why they were not ultimately deployed during that election, but they "were unimpressed," noting the intelligence suggested Iran "lacked the capability to deploy deepfakes in a way that would seriously impact the 2020 presidential election."

On December 31, 2024, the US Department of the Treasury identified the Cognitive Design Production Center (CDPC), a subsidiary organization of the IRGC, as an organization that planned influence operations "designed to incite socio-political tensions among the US electorate, on behalf of the IRGC" since at least 2023. While not explicitly stated by the US Department of the Treasury, based on the reports by Microsoft and OpenAI, the CDPC likely employed AI tools for content generation in its influence operations.

"Resistance" Against Israel and Its Allies

Advanced influence threat actors likely aligned with Iran are conducting a persistent malign influence campaign seeking to sow discontent within Israel and its allies, and some of these Iranian influence operations networks have used AI to generate content aligned with their "resistance" objectives. Recorded Future identified multiple domains that very likely use Storm-2035's infrastructure to disseminate English and French content consistent with anti-Israel, anti-US, pro-Palestine, and pro-Iran themes. According to OpenAI, the network has also leveraged LLM capabilities for content and comment generation. Another Iran-aligned network, referred to as Emerald Divide (which overlaps with activities Microsoft attributes to Iranian state threat actors Sefid Flood and Storm-1364), seeks to

exacerbate ideological divisions within Israeli society. The group, which has used at least seven primary social media accounts and a coordinated inauthentic behavior (CIB) network of over 250 accounts, employed emerging technology such as AI-generated deepfakes to impersonate political and religious leaders in an effort to stoke divisions over the Israeli government's reaction to the Hamas attacks in October 2023 and over the ongoing conflict against Iran's "axis of resistance."

Even before the October 7, 2023, Hamas attacks, Emerald Divide had developed and used inauthentic online personas with generative AI in an attempt to divide Israeli society. In 2022, the network used AI to impersonate a prominent Israeli rabbi, using inauthentic accounts to disseminate online content expressing negative sentiment toward the LGBTQ+ community. Emerald Divide then used additional inauthentic social media accounts aligned with the LGBTQ+ community to criticize the content originally disseminated by the first round of inauthentic accounts. By creating inauthentic accounts aligned with both communities, Emerald Divide sought to manufacture an online echo chamber capable of inciting social conflict between Israel's ultra-Orthodox religious groups and its LGBTQ+ community. For example, in April 2022, Emerald Divide created and posted at least two AI-generated deepfake videos of an Israeli rabbi, Shlomo Moshe Amar, condemning LGBTQ+ rights.

Figure 12: *Screenshot of an audio deepfake impersonating Israeli Rabbi Shlomo Moshe Amar (Source: YouTube)*

The October 7, 2023, Hamas attack on Israel, and Israel's subsequent military campaigns in Gaza and Lebanon, almost certainly created an opportunity for Iran-linked influence threat actors to leverage AI in content, image, and video creation, as well as in the dissemination of that content on social media and other messaging platforms. In the wake of Iran's April 2024 direct missile and drone attack on Israel, social media websites were "swamped with misrepresented visuals" of the strikes, including over 30 false, misleading, or AI-generated images and videos identified by the Institute for Strategic Dialogue. In 2024, the International Union of Virtual Media (IUVM), an Iranian state-sponsored influence operations network affiliated with the IRGC Quds Force (IRGC-QF), began incorporating AI into its creation and translation of new articles, headlines, website tags, and images. In a campaign known as "Tears of War," which Israel's Shin Bet attributed to Iran's security services, the Emerald Divide network convinced Israelis to hang banners in Israeli neighborhoods displaying an AI-generated poster of Israeli Prime Minister Benjamin Netanyahu that read "impeachment now." In early January 2025, AI-generated images denigrating Netanyahu, including an image of the Israeli leader with deceased Hamas leader Yahya Sinwar (**Figure 13**) and a suitcase of money, and another image of Netanyahu holding a weapon

to an Israeli hostage's head (**Figure 14**), were promoted through Facebook accounts and Telegram channels linked to Iranian influence networks.

Figures 13 and 14: *AI-generated images published by IUVM and Telegram channel "Israeli Patriots" (Sources: Recorded Future and YNet)*

Iran is also almost certainly using AI content generation for its surging cyber-enabled influence operations. In December 2023, Iranian state-backed hackers interrupted television streaming services in the United Arab Emirates (UAE) with an AI-generated news broadcast branded "For Humanity," which included "graphic" footage of Palestinians killed and injured by Israeli military operations in Gaza. According to Microsoft, the threat actor Cotton Sandstorm was responsible for the disruption, which affected services in the UAE, United Kingdom, and Canada. Microsoft indicated the operation "marked the first Iranian influence operation Microsoft has detected where AI played a key component in its messaging."

Figure 15*: AI-generated fake news broadcast, attributed to Iranian threat actor Cotton Sandstorm, interrupted UAE streaming services (Source: Microsoft)*

Military and Intelligence Systems

The AI-enabled assassinations of Mohsen Fahkrizadeh, a key figure in Iran's nuclear weapons program, and Hamas leader Ismail Haniyeh — both of which occurred on Iranian soil, attributed to Israel — very likely motivate Iran's interest in catching up to its adversaries in this field. Since the Supreme Leader's 2021 AI directive, Iranian military and strategic leaders have consistently touted the Iranian military's incorporation of AI into its weapons arsenal and defense strategy. Iran very likely views AI as a force multiplier for its strategic defense doctrine, which relies on asymmetric tactics and proxies for regional power projection as well as deterrence through its large missile and drone arsenal. Iran's ongoing endeavor to modernize its military assets and employ cutting-edge technology is a matter of national pride for the Iranian government, which consistently celebrates its indigenous defense capabilities. Researchers at Iran's Supreme National Defense University and the University of Tehran recognize the utility of AI in "strategic foresight" and argue that AI could "guarantee prevention of future surprises."[97]

While Iran's defense-oriented strategic experts have recognized that AI should be a key driver for Iranian military power in the next ten years, the extent to which Iran has systematically and comprehensively applied AI in Iran's defense strategy remains unclear. The government of Iran mandates that at least 5% of the budget be dedicated to enhancing defense capabilities, but how that 5% is allocated remains an intelligence gap.[98] The integration of AI in Iran's military arsenal is likely spread across Iran's electronic warfare, missile, drone, and naval systems. However, tangible evidence of Iran's successful employment of AI in these military systems is limited due to the lack of publicly available and independently documented use of AI in its weapons systems. For example, in 2022, IRGC Aerospace Force Commander, Brigadier General Amir-Ali Hajizadeh, claimed that AI enabled Iran to defeat the enemy "at a distance of more than a thousand kilometers away"[99] — without any specifics as to where and how AI was used against an enemy.

Electronic Warfare

Iran is very likely seeking to integrate AI into signals detection, defensive interception capabilities, and electronic attack systems, given its focus on electronic warfare (EW). As early as 2011, Iran allegedly leveraged advanced EW to down a US drone over Afghanistan and has since touted its EW capabilities during military drills and at defense exhibitions.[100] [101] For example, Iran's conventional armed forces conducted a large exercise in August 2023 called "Shield of Guardians of Velayat 1402," which used "stationary, roving, ground-based and airborne electronic warfare systems" to counter incoming drones and micro aerial vehicles (MAVs).[102] By January 2025, the Iranian Army Commander, Mohammad Baqeri, lauded his forces' use of AI in EW during a war game in which "offensive and defensive micro air

[97] *https://jfs.journals.ikiu.ac[.]ir/article_3197.html?lang=en*
[98] *https://dolat[.]ir/detail/425572*
[99] *https://www.presstv[.]ir/Detail/2022/09/07/688802/Iran-defeated-enemy-at-distance-of-over-1,000-kms-with-help-of-artificial-intelligence--Senior-IRGC-commander*
[100] *https://www.tehrantimes[.]com/news/488330/Iran-Army-launches-electronic-warfare-drills*
[101] *https://iranpress[.]com/iran-unveils-advanced-radar-and-electronic-warfare-systems-at-russian-exhibition*
[102] *https://www.tehrantimes[.]com/news/488330/Iran-Army-launches-electronic-warfare-drills*

vehicles" were detonated against targets.[103] Earlier in the month, Iranian Navy Commander Rear Admiral Shahram Irani announced a new EW unit was established in the port of Jask and was equipped with new defense systems — likely with AI capabilities.[104]

Iranian academic publications suggest that the Iranian military recognizes the potential benefits of AI-enabled electronic warfare. In the Iranian Journal of Electrical & Electronic Engineering, Iranian engineers have noted the application of AI in GPS spoofing detection and mitigation.[105] An article published by the AJA Command and Staff University — a staff college of the Islamic Republic of Iran Army (Artesh) — in November 2024 concluded that "natural language processing and artificial intelligence information fusion algorithms have the highest priority in the national integration of electronic warfare operations planning, followed by intelligent decision-making systems," with the third priority being "the use of advanced algorithms in real-time integration of big data and complex data." According to the journal article, "in the not-so-distant future, understanding, analyzing, and fully recognizing the electromagnetic space in the absence of artificial intelligence will be very difficult, and electronic warfare operations will be doomed to failure."[106] Another article published in the AJA's "Defensive Future Studies" January 2025 edition concluded the use of AI tools "at all levels in attack, support, and electronic protection is necessary."[107]

Weapons Systems

The Iranian military has frequently boasted of using AI in its military capabilities, including its air, naval, and ground forces. Although Iran's conventional forces and its IRGC have suggested their weapons systems are equipped with AI technology, the IRGC is likely implementing more advanced technical systems — including AI — than Iran's conventional armed forces. During the "First National Conference on Command and Control in Cognitive Warfare," held in December 2024, the Coordinating Deputy of the Iranian Army asserted that "AI in drones and other defense equipment can play a pivotal role, and this technology is on the Army's agenda."[108] The IRGC, which has its own RSSJO for manufacturing advanced weaponry and equipment, is likely leading the charge regarding the integration of AI. The state-run Tehran Times lauded Iran's achievement of "notable progress in incorporating AI into its military capabilities, spearheaded by the IRGC Navy," which allegedly developed "over 2,600 AI-enhanced pieces of equipment, including advanced missiles and drones" to boost precision and operational capabilities.[109]

The effectiveness of Iranian forces' AI implementation into its warfighting systems remains opaque. Iran is almost certainly prioritizing the integration of AI into its missile and drone systems for targeting and guidance, based on military leaders' statements. Iran's top defense officials have lauded the Abu Mahdi precision-guided cruise missile that wasfirst deployed in July 2023 with a 1,000 km range as the

[103] *https://kayhan[.]ir/en/news/136329/top-commander-iran-prepared-for-electronic-warfare*
[104] *https://en.mehrnews[.]com/news/226955/Electronic-warfare-units-to-be-stationed-in-Iran-s-Jask*
[105] *https://ijeee.iust.ac[.]ir/article-1-3348-en.pdf*
[106] *http://www.ijwg[.]ir/article_209862.html?lang=en*
[107] *https://www.dfsr[.]ir/article_719902.html?lang=en*
[108] *https://www.tehrantimes[.]com/news/507614/Iranian-Army-to-expand-AI-use-in-drones-and-defense*
[109] *https://www.tehrantimes[.]com/news/507614/Iranian-Army-to-expand-AI-use-in-drones-and-defense*

"pinnacle of our nation's technological progress."[110] The Abu Mahdi missile allegedly uses AI to "confront electronic warfare," "evade radar detection," and "chart its optimal flight path."[111] In 2020, the IRGC Aerospace Force claimed to have designed an "automatic and intelligent system" to launch long-range ballistic missiles.[112] Over the last two years, Iranian commanders have claimed that at least four other Iranian missiles reportedly have been "equipped" with AI, including the Fath-360 short-range tactical ballistic missile and the Ghadir (Qadir) cruise missile, unveiled during IRGC Navy exercises held in August 2023.[113] During its January 2025 "Prophet Muhammad" naval exercise, the IRGC claimed to have deployed and fired AI-enhanced Qaem air-to-ground bombs and Almas missiles from Mohajer-6 and Ababil-5 drones, which "enhanced their precision and effectiveness."[114]

Figures 16 and 17: *The Abu Mahdi cruise missile, allegedly equipped with AI command and control systems (Source: Tasnim News[115])*

Iran's use of unmanned aerial vehicles (UAVs), or drones, to launch attacks on Israel and its allies has almost certainly reflected Iran's prioritization of these systems for military development as part of its "drone leap" program.[116] Given UAVs' key role in Iran's overarching "forward defense" strategy, the integration of AI into Iranian drones is likely to be a top development priority focused on three objectives: extending range through AI-enabled navigation, developing the ability to make autonomous targeting decisions, and enabling swarming tactics.[117] In January 2025, Iranian television news reported on the Iranian Army's receipt of 1,000 new drones, including the Arash-2 drone. This drone now has an AI-based navigation system enabling it to reach its target "without any guidance from a command center" and is "highly resistant to the enemy's electronic warfare." In October 2023, Iran's Air Defense Force conducted a drone exercise that allegedly used AI to conduct a "mass flight" of drones from

[110] *https://iranpress[.]com/iran-s-abu-mahdi-missile-a-game-changer-in-countering-us-aircraft-carriers-cmmdr*
[111] *https://iranpress[.]com/iran-boosts-maritime-defense-with-abu-mahdi-long-range-long-range-cruise-missile*
[112] *https://nournews[.]ir/en/news/56337/IRGC-unveils-new-smart-ballistic-missile-launcher*
[113] *https://en.irna[.]ir/news/85187518/IRGC-Navy-receives-Qadir-Fath-360-missiles*
[114] *https://en.mehrnews[.]com/news/227472/Iranian-drones-fire-AI-powered-missiles-in-Persian-Gulf-drill*
[115] *https://www.tasnimnews[.]com/en/news/2023/07/25/2931092/iran-naval-forces-get-new-long-range-ai-powered-cruise-missile*
[116] *https://www.presstv[.]ir/Detail/2023/08/23/709482/What-Makes-Iran-Newly-Unveiled-Mohajer10-Drone-Asset*
[117] *https://www.tasnimnews[.]com/en/news/2024/08/15/3142101/iran-defense-minister-nominee-outlines-strategic-military-development-plans*

various ground, underground, and sea bases and fired "smart ammunition" to hit targets.[118] Brigadier General Alireza Sheikh, the Iranian Army's Deputy of Training and Education, stated, "The ability of mass flights using artificial intelligence is one of the innovative measures in the Islamic Republic of Iran Army's operation of drones."[119] A 2021 Iranian television report (cited in an academic study of Iranian missiles) on a drone exercise noted the use of "artificial intelligence for image processing" allowing for the destruction of targets "without the need for GPS signals."

While the focus on AI in unmanned systems has likely been UAVs, Iran has also reportedly developed unmanned ground vehicles (UGVs; they are also referenced as unmanned combat vehicles or ground robots) that allegedly leverage AI or "intelligent" capabilities. Specifically, Iran has claimed to have several models that rely on a "combination of artificial intelligence and robotic knowledge."[120] The three UGV models developed by the Army Ground Forces RSSJO — including the Nazir, the Heidar-1 (Heydar-1), and the Caracal — vary in size and functionality. The Nazir, for example, is designed to carry out reconnaissance and combat missions using an optical detection system, whereas the Caracal can carry "semi-heavy" weapons and is equipped with "an intelligent remote control system," "laser range finder," and "an optical system."[121] In a January 2025 exercise, the Iranian Army reportedly tested "combat robots" whose role was to "transport equipment for friendly forces and target enemy munitions."[122]

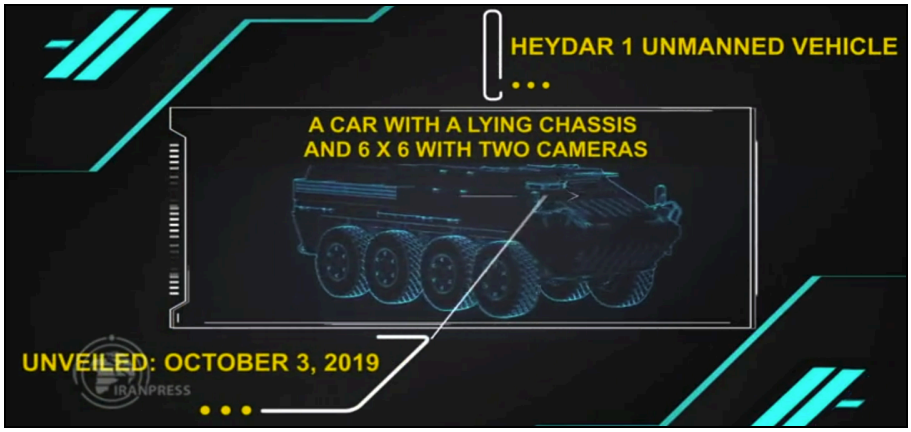

Figure 18: *Screenshot of video of Heydar-1 UGV (Source: IranPress[123])*

Iran has also claimed to have implemented AI in a significant range of naval platforms and systems, framing the use of AI in naval operations as a means of extending the range of its advanced military operations far from Iran's borders, likely an effort to amplify Iran's "forward defense" strategy. In January 2025, Iran's AI-equipped Zagros warship, part of a new generation of vessels designed for electronic surveillance and cyber intelligence operations, joined the Iranian Navy fleet, allegedly boasting "cutting-edge sensors," "advanced data-processing," and "intelligent monitoring systems"

[118] *https://kayhan[.]ir/en/news/119961/iranian-drones-carry-out-'extraordinary'-feats*
[119] *https://www.presst[.]ir/Detail/2023/10/04/712052/Iran-kamikaze-combat-drones-drill-*
[120] *https://iranpress[.]com/a-look-at-new-iranian-military-unmanned-combat-vehicles-nazir-heider*
[121] *https://iranpress[.]com/iranian-unmanned-combat-vehicle-combining-artificial-intelligence-robotic-knowledge*
[122] *https://www.tehrantimes[.]com/news/508868/Iran-testing-combat-robots-developing-new-models-Army-tells*
[123] *https://iranpress[.]com/a-look-at-new-iranian-military-unmanned-combat-vehicles-nazir-heider*

using "AI-driven algorithms."[124] Iran IRGC commander Hossein Salami has lauded the growing role of AI in naval operations, particularly in "precision targeting and minimizing human casualties."[125] Iran touted its ability for AI-enabled drones to strike "any desired part of a hostile naval target thousands of miles from the mainland."[126] In August 2024, IRGC Navy Commander Ali Reza Tangsiri lauded his organization's deployment of AI in equipment manufactured by the MODAFL and by the IRGC Navy's "specialized missile center," which has "enhanced the accuracy, target [acquisition], and surgical strike [capabilities]" of the force's missile, radar, and drone equipment.[127] [128] Tangsiri noted that some AI achievements that "have come to fruition" were on display among the 2,654 new systems acquired by the IRGC Navy. In November 2023, Tangsiri lauded that Iran's unmanned underwater vehicles (UUVs) and unmanned surface vessels (USVs) use AI to "receive commands, attack a specific target with a desired layout, and return to base after carrying out an attack."[129] He also indicated the IRGC Navy has furnished its long-range cruise missiles with AI to ensure "high controllability after launch."[130]

In the strategic realm, Iranian political scientists and warfighters are almost certainly grappling with the ramifications of AI breakthroughs on national security and warfare. In the Quarterly of Political Strategic Studies, international relations scholars asserted that "a highly contentious debate is unfolding within the military sphere regarding the use of AI in the command and control systems governing how senior officers convey essential orders to their subordinate soldiers."[131] A study published in September 2024 that engaged over thirty Iranian defense experts titled "The Drivers of the Military Power of the Islamic Republic of Iran in the Geography of the Persian Gulf and the Sea of Oman in the Horizon of 2034" identified AI as two of six surprise "drivers" of Iran's military power in the next ten years. It specifically included "upgrading the command and control network based on artificial intelligence" and "intelligent electronic and identification information systems."[132] A 2019 article in the Quarterly Journal of Military Sciences and Tactics, affiliated with the Iranian Army, concluded that "the broader deployment of defense and security applications of the Internet of Things in general will take time" but asserted that Ministry of Defense and public safety organizations should "adopt best practices for technology development and ownership from the private sector, as well as consider a more traditional model of innovation and procurement."[133] [134]

Border Security

Iran has claimed to implement AI in its border security, specifically along its eastern border. According to the Iranian Army Ground Force Commander Brigadier General Kiumars Heidari, the army has implemented a plan to "seal the eastern borders" using AI technologies. The plan leverages AI for an "intelligent blockade," with ground sensors, alert radars, and drones in addition to a 930-kilometer-long

[124] *https://ifpnews[.]com/iran-newly-unveiled-zagros-new-generation-ai-powered-vessels/*
[125] *https://www.tasnimnews[.]com/en/news/2024/08/09/3136859/irgc-commander-stresses-expansive-engagement-capabilities-against-enemies*
[126] *https://nournews[.]ir/en/news/152384/IRGC-drones-capable-of-targeting-far-away-vessels-with-AI*
[127] *https://en.isna[.]ir/news/1403052012941/Tangsiri-AI-has-been-used-in-the-latest-IRGC-missile-and-drone*
[128] *https://en.mehrnews[.]com/news/219239/IRGC-Navy-says-new-AI-based-equipment-enhanced-precision*
[129] *https://www.tasnimnews[.]com/en/news/2023/11/08/2985263/irgc-develops-ai-powered-vessels-submarines*
[130] *https://www.presstv[.]ir/Detail/2023/12/20/716718/IRGC-Navy-vessels-furnished-with-indigenous-missiles-guided-by-artificial-intelligence*
[131] *https://qpss.atu.ac[.]ir/article_16300.html?lang=en*
[132] *https://mdr.ihu.ac[.]ir/article_209420.html?lang=en*
[133] *https://www.qjmst[.]ir/article_38084.html*
[134] *https://www.qjmst[.]ir/article_38084_60144f13032f7eb71c1cd2ba88373afb.pdf*

wall along its border with Afghanistan.[135] [136] In an article on "identifying new border monitoring methods with an emphasis on technology" in the Quarterly Journal of Military Sciences and Tactics, researchers advocated for prioritizing "the field of artificial intelligence and electronic and telecommunication technologies" for use in "micro-birds."[137]

During the Arbaeen pilgrimage period in September 2023, Iran announced it had deployed balloon platforms near Iran's northern and western borders.[138] The balloons allegedly offered cellular and WiFi services to pilgrims while also having the ability to monitor "for border surveillance as needed." Along the Iraq border, the "Bam 50" balloon platform "integrates advanced navigation and automatic mechanisms for data collection and transmission," while a "new generation" of balloon platforms deployed in East Azerbaijan Province "have the capability to launch intelligent communication balloons" in areas affected by natural disasters.

Domestic Security

Iran almost certainly seeks to leverage AI for its internal security and domestic surveillance. Two objectives likely drive Iran's use of AI in the domestic sphere: morality enforcement and suppression of dissidents. With its regime's survival at risk, the 2022 "Woman Life Freedom" protest movement was very likely a key trigger for the Iranian government to increase its development and use of AI technology as a tool for monitoring its population, enabling greater control over morality and opposition. Faced with an unprecedented challenge to its legitimacy and social control, and a deep-seated security threat emanating from domestic opposition, the Iranian government almost certainly sought to leverage technology — including AI-enabled systems — to identify non-compliant women and political dissenters.

Morality Enforcement

Iran's alleged use of "smart" technology to monitor its citizens' dress and activities predated the 2022 protest movement. In August 2022 — a month before the death of Mahsa Amini in police custody, after which the national protest movement erupted — the Headquarters for the Promotion of Virtue and Prevention of Vice published a 119-page document detailing Iran's hijab policy, specifying the introduction of surveillance cameras to monitor, identify, and punish unveiled women.[139] That organization's secretary, Mohammad Saleh Hashemi Golpayegani, warned of Iran's use of surveillance cameras to identify non-compliant women, specifically in the Tehran metro and subway systems in other cities.[140] AI-enabled facial feature detection allows the Iranian government to monitor for hijab violations, cross-referencing images with Iran's biometric face scan data from Iran's national identity database.

---

[135] *https://www.tasnimnews[.]com/en/news/2024/08/30/3150679/iran-s-ai-driven-border-security-plan-to-finish-early-army-commander*
[136] *https://channel8[.]com/english/20224*
[137] *https://www.qjmst[.]ir/article_713051_1e45b02554af7f8a87ee96eab6015ab6.pdf*
[138] *https://www.tasnimnews[.]com/en/news/2023/09/10/2954078/iran-equips-border-crossing-with-advanced-telecommunication-balloon-platforms*
[139] *https://iranwire[.]com/en/women/106726-newly-published-document-details-full-scope-of-irans-new-hijab-policy/*
[140] *https://iranwire[.]com/en/women/107067-key-official-facial-recognition-can-identify-unveiled-iranian-women-on-the-subway/*

The Iranian government has almost certainly further institutionalized AI technology to reinforce the morality codes that precipitated the movement, centered on the detection of non-compliance with mandatory hijab. In June 2023, the commander-in-chief of Iran's police, Ahmadreza Radan, identified cyberspace as one of four approaches for "addressing instances of non-compliance with hijab."[141] The "Law to Support the Family by Promoting the Culture of Chastity and Hijab" — known as the Chastity and Hijab bill, approved by Iran's Guardian Council in October 2024 and submitted to the government for implementation in December 2024 — explicitly indicates that Iran's police command is "required" to establish and strengthen "smart platforms to identify perpetrators of illegal behavior using tools such as fixed and mobile cameras and artificial intelligence."[142] Although Iran's National Security Council postponed implementing the controversial law on December 14, 2024, the mandated use of AI in the proposed law underscores the Iranian government's intent to leverage technology for its morality enforcement. This requirement has likely prompted further development and implementation of AI into Iran's digital surveillance apparatus and monitoring systems, from surveillance cameras to social media images.[143]

In its Seventh Development Plan, the Iranian government outlined its proposal for a "Lifestyle Monitoring System" designed to enhance its ability to collect intrusive data on Iranians to "facilitate citizens' lives." The proposed legislation would require government and public service providers, e-commerce platforms, and other private digital services to upload Iranian user data to the "System for Monitoring, Evaluating, and Continuously Measuring Public Culture and Lifestyle Indicators." This level of data collection on its citizens, if pursued, likely raises the risk that Iranian authorities could use AI to profile its population and "infer individuals' political orientation, potentially classifying them as opponents of the state."[144]

Suppressing Dissent

According to a comprehensive study by the European Parliament's Subcommittee on Human Rights, Iran uses AI for "algorithmic authoritarianism." Through its National Information Network (NIN), a local intranet that seeks to isolate Iranian internet users by ensuring domestic hosting, provides the state with the ability to collect users' data and maintain control over content. The NIN serves as the "foundational data infrastructure of future AI-based systems." Iran's "data-driven approach to monitoring" using AI-based tools to analyze patterns in social media platforms and internet traffic, allows Iranian authorities to "systematically accumulate information" while "constructing comprehensive digital profiles." Sophisticated algorithms enable swift identification of anti-government sentiment or mobilization plans, revealing patterns of dissident behavior and enabling authorities to pre-emptively neutralize potential threats. For example, Iran uses AI algorithms to digitally block online content that is considered inconsistent with Iran's Islamic values.

[141] *https://farsnews[.]ir/Provinces/1686835179000313655*
[142] *https://iranhumanrights[.]org/wp-content/uploads/Hijab-Law-Final-CHRI-Translation.pdf*
[143] *https://iranwire[.]com/en/news/117594-cameras-and-ai-islamic-republics-high-tech-plans-to-enforce-hijab/*
[144] *https://filter[.]watch/en/2023/12/14/irans-peoples-lifestyle-assessment-system-a-new-surveillance-threat/*

During the administration of President Mahmoud Ahmadinejad, the 2009 Green Movement protests almost certainly demonstrated for Iranian leaders how social media platforms, blogs, and online television could prove to be a national security vulnerability. By 2014, the Iranian government sought to censor social media content with the launch of the "intelligent filtering" program, which removed "criminal" content from social networks without banning them entirely. The Iranian government sought to gain control over the information space by censoring specific types of content deemed morally questionable or politically damaging rather than completely banning websites. According to then-Communications Minister Mahmoud Vaezi, Instagram was the "pilot study" for the "smart filtering plan." The IRGC launched the Ankaboot surveillance operation, using a "spider" or crawler tool to identify activities deemed to propagate "corruption" or promote Western lifestyle on Instagram, Viber, and WhatsApp.[145] A study of 15,238 Instagram accounts revealed that 983 were blocked; of those, a sample of 78 blocked pages revealed that accounts belonging to Western celebrities, fashion brands with revealing ad content, or "provocatively-dressed" Iranians or Iranian celebrities living in exile were commonly targeted.

Iran uses AI-driven bots and automated inauthentic accounts for domestic repression to spread its pro-government narrative and disparage women's rights movements. The bots post, share, comment, and spread content that supports the regime's messaging and bolsters its propaganda, "flooding the information space to drown out critical debate and discussion." These inauthentic accounts, attributed to bots or trolls, damage the credibility of legitimate accounts they target, significantly reducing engagement and thwarting women's rights groups' digital expression. For example, an analysis by Qurium, a digital forensics and security organization, revealed that 3,000 new followers were added to the Instagram account *@me_too_movement_iran* on a daily basis for several weeks, which was "the first indication that an automated service [was] being used to create the fake subscriptions." Qurium traced the generation of fake followers to two companies based in Pakistan, identified as Promotion Guru and Dua Communication. The Instagram attack intimidated the community of followers, and Iranian women's rights groups were forced to privatize their accounts.

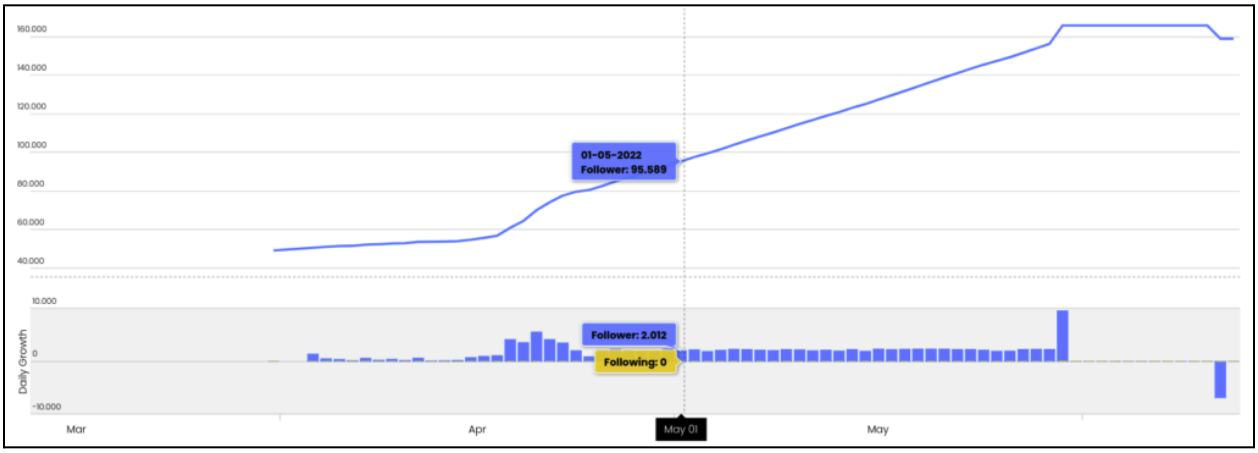

Figure 19: *Graph shows a constant increase in Instagram account @me_too_movement_iran by 3,000 followers in May 2022 (Source: Qurium)*

[145] *https://iranhumanrights.org/2015/03/facebook-users-arrested/*

The Iranian government has also used natural language processing (NLP) to conduct digital sentiment analysis, enabling a "real-time feedback loop" that authorities use to refine and adapt their anti-opposition content. Deep learning models craft content, such as infographics or short videos, that resonates with specific segments of the Iranian population. These AI-enabled tools enable the regime to shape narratives for maximum impact across various social media and messaging platforms.

Domestic Monitoring AI Technologies Used

Iran's Law Enforcement Command, known as FARAJA, has reportedly signed a memorandum of "scientific and research cooperation" with Amirkabir University of Technology for the advancement of AI, including "cooperation in the commercialization and development of operational prototypes," in "conducting operational tests of technological systems", and in "assisting with feasibility studies and defining operational needs for FARAJA."[146] In October 2023, the FARAJA announced five "technological and intelligent achievements," including an "intelligent system for querying the status of authenticity, ownership and records of the vehicle." Other advancements included "an integrated dashboard" that provided statistics and "real-time reports of crimes based on geographic and time location."[147]

Open-source information provides limited insight into the specific AI technologies deployed. Iran is almost certainly purchasing Chinese-made AI technologies for use in its domestic surveillance and repression through an ecosystem of Iranian technology suppliers and through direct Iran-China business relationships.[148] Iran's Official Gazette (روزنامه رسمی جمهوری اسلامی ایران, Rooznameh Rasmi), which publishes company information such as shareholders, directors, intellectual property filings, and relevant legislation,[149] shows that at least four Chinese companies that use AI or smart technology for surveillance or monitoring have been trading in Iran since 2003.[150] A number of Iran-based companies have also been identified as developers of AI technology.

Company	Year	Description of Technology Usage in Iran
Hangzhou Hikvision Digital Technology Co., Ltd. (Hikvision)	2008	Hikvision's technology in Iran likely includes license plate recognition technology.[151] Hikvision's website references AI as a "core technology" and notes that its solutions include facial recognition, vehicle identification, and people counting.[152]
Huawei	2006	Iranian officials have embraced Huawei's "safe city" concept, including the mass installation of facial recognition and other AI

[146] *https://aut.ac[.]ir/content/18578/Development-of-scientific-collaborations-between-Amirkabir-University-of-Technology-and-Faraja-for-the-advancement-of-artificial-intelligence.*

[147] *https://en.isti[.]ir/knowledge%E2%80%93based-institutions-&-companies-center-news-archive/Unveiling-of-five-technological-and-intelligent-achievements-of-Faraja-with-the-presence-of-Dehghani/94061*

[148] *https://iranwire[.]com/en/politics/109865-which-companies-individuals-supply-iran-with-equipment-used-for-repression/*

[149] *https://learn.sayari[.]com/iran-rooznameh-gazette/*

[150] *https://tehranbureau[.]com/the-chinese-companies-building-irans-surveillance-state/*

[151] *https://www.instagram[.]com/hikvision.iran.cctv/?utm_source=ig_embed*

[152] *https://www.hikvision[.]com/us-en/core-technologies/ai-analytics/*

		technologies in public spaces.[153] Tehran and Kashan reportedly hosted conferences focused on implementing "safe city" models in 2017. According to a US government indictment, Huawei subsidiary Skycom allegedly assisted the Iranian government in performing surveillance during the 2009 Green Movement demonstrations.
Tiandy	2007	According to a December 2021 report by the surveillance industry research group Internet Protocol Video Market (IPVM), Chinese manufacturer Tiandy signed a five-year contract with the Iranian government — including the IRGC, police, and military — to supply Iran's security services with advanced camera technology. Tiandy is a leading producer of facial recognition software, including ethnicity-detecting AI technologies used by the Chinese Communist Party. In 2022, the Foundation for Defense of Democracies found that Tiandy's Iran distributor, Faragostar Persia Electronics Co., listed dozens of AI-enabled dome cameras and analytic software. Tiandy Iran indicated on Instagram that its cameras can "detect crowds," "running," "loitering," and can "count people."[154] Its Starlight technology can "capture moving objects in almost totally dark scenes," which would likely enable the identification of protesters at night.[155]
Zhejiang Dahua Technology Co., Ltd. (Dahua)	2013	According to the Uighur Human Rights Project, Chinese company Zhejiang Dahua Technology Co., Ltd. (known as Dahua) has over 34,000 camera networks in Iran.[156] The company entered the Iranian market in 2013 through an Iranian company called Ilya Tejarat Bam Tehran Trade Co. and then expanded to its own business in Iran.[157] Dahua's Iran business Instagram account posted a promotional video featuring camera systems that identify shoppers in grocery stores and pedestrians outside elementary schools, then send their data to a "security center" for processing. Dahua's HDCVI 6.0 technology uses "inclusive AI" in its "perimeter protection," which relies on "intelligent analysis" for tripwire and intrusion capabilities. Its SMD Plus allows for "comparison of face images with the user-defined face image database," and its "face recognition can quickly search for the target and provide warnings or alarms on suspects or strangers" (**Figure 20**) while its "metadata search supports feature

[153] *https://tehranbureau[.]com/the-chinese-companies-building-irans-surveillance-state/*
[154] *https://www.instagram[.]com/p/Bh_C0KTnnWz/?utm_source=ig_web_copy_link*
[155] *https://tehranbureau[.]com/the-chinese-companies-building-irans-surveillance-state/*
[156] *https://uhrp[.]org/report/dahuas-links-to-human-rights-abuses-in-east-turkistan/#AboutDahua*
[157] *https://tehranbureau[.]com/the-chinese-companies-building-irans-surveillance-state/*

		extraction of people, [as well as] motor and nonmotor vehicles." (**Figure 21**)[158]
Niafam	2015	Analysis of Iranian government emails, revealed by Anonymous Iran Ops, identified Niafam as an Iranian company working with Iranian law enforcement since around 2015 to develop technologies for image analysis and facial identification.[159] Specifically, the company was cooperating with Iran's attorney general's office to launch a portal with facial recognition and "to identify characters present in news images to enrich content."[160]
Yaftar Pazhohan Pishtaz Rayanesh (Yaftar)	2014	Leaked communications between Yaftar and the Iranian prosecutor's office revealed Yaftar as an Iranian company working with Iranian law enforcement to develop technologies that detect perceived moral infractions, such as images of women not wearing a hijab or same-sex kissing. The company had long-term plans to develop web crawler systems to enable "proactive censorship" by collecting data from search engines such as Google, Yahoo, and Bing.[161] [162]
Danesh Baniyan Hosh Data Mehtab (Datamoon)	2017	The company "started its work in censorship with the help of artificial intelligence" and participates in Iran's "Safe Program."[163] According to its 2023 product catalog, Datamoon developed AI software, including a "self-imaging license plate reader, facial recognition, and Kodnagar container code recognition software" for government customers.[164]
Nazarbin	2009	Founded by doctoral students at the University of Tehran and Sharif University of Technology, Nazarbin's services enabled Instagram inspection and censorship of social networks; it has been associated with Iran's "Safe Plan." The service can filter text to identify religious insults and "unethical" or "vulgar" comments.[165]

***Table 2**: Chinese and Iranian companies involved in AI-enabled or "smart" monitoring and surveillance technology (Source: Recorded Future)*

[158] *https://www.instagram[.]com/p/CCV6G7wDQKk/?utm_source=ig_embed*
[159] *https://filter[.]watch/english/2023/10/27/facial-authentication-and-recognition-from-reality-to-political-propaganda/*
[160] *https://filter[.]watch/2023/09/19/internet-oppressors-a-look-at-the-office-of-irans-attorney-general-and-its-contractors/*
[161] *https://filter[.]watch/2023/09/19/internet-oppressors-a-look-at-the-office-of-irans-attorney-general-and-its-contractors/*
[162] *https://www.ifmat[.]org/02/21/yaftar-pazhohan-pishtaz-rayanesh/*
[163] *https://hooshio[.]com/شرکت-های-چند-حوزه-ای-هوش-مصنوعی-در-ایران/*
[164] *https://datamoon[.]ir/wp-content/uploads/2024/02/datamoon_catalogue.pdf*
[165] *https://hooshio[.]com/نظربین-خلق-هسته-بررسی-و-تعدیل-کامنت-های/*

Figures 20 and 21: *Dahua's HDCVI 6.0 facial recognition and metadata extraction technology was posted on its dahua[.]ir Instagram account (Source: Tehran Bureau[166])*

Mitigations

- Companies involved in researching, developing, or producing AI models, software, or "smart" technology should invest in and maintain vigilant detection mechanisms to disrupt malicious or disingenuous uses of AI tools by Iranian threat actors and terminate those accounts.
- Companies that supply or export semiconductors and advanced computing integrated circuits should maintain awareness of pertinent export controls on technology related to AI, such as the US Department of Commerce export control regulations specifically targeting AI chips, or European Union controls on dual-use computing items equipment outlined in the Wassenaar Arrangement, and implement robust compliance programs to prevent Iranian entities or third-country procurement networks from acquiring specified materials or technology.
- Academic and research institutions involved in the AI field should be cognizant that the Iranian government and military leverage Iranian universities or institutions to advance national security-related technology advancement and heighten awareness while engaging with Iranian nationals in international scientific communities.
- US and allied governments should invest resources in identifying specific Iranian or foreign companies and entities involved in developing AI for Iran's military and intelligence apparatus and maintain vigilant defenses against cyber espionage or attack as the Iranian government tries to close the gap in warfare AI capabilities.
- Western organizations, particularly governments, defense contractors, foreign policy-related institutions, and critical infrastructure companies, should follow cybersecurity advisories related to the detection and prevention of Iran state-sponsored cyber threats, such as those published by the US Cybersecurity & Infrastructure Security Agency (CISA).
- Customers should use the Recorded Future® Intelligence Cloud to monitor Iranian threat actors' AI-enhanced cyber TTPs, heeding the Israel National Cybersecurity Directorate's warnings of increasingly sophisticated tailored phishing threats.

[166] *https://tehranbureau[.]com/the-chinese-companies-building-irans-surveillance-state/*

Outlook

Iran's adoption and implementation of AI will likely continue to improve over time. Restrictions on Iran's access to the global technology market will likely limit Iran's innovation and global ranking in AI development and likely drive Iran to expand its cooperation with Western adversaries — namely China and Russia. Iran will likely seek to leverage its strategic alignment with Western adversaries against US hegemony through bilateral relationships and through international fora such as Brazil, Russia, India, China, and South Africa (BRICS) to bolster its technological advancement in AI systems.[167] [168] In December 2024, Iran participated in the first inaugural meeting of the "AI Alliance Network," established by Russia to bring together national associations and development institutions in the AI field from BRICS countries and to enable AI product sales in member countries' markets.[169]

Iran's government-driven approach to AI, repressive domestic security environment, and faltering economy will very likely continue to constrain domestic AI development. As Iran endeavors to assert its national strength and technological sovereignty through AI advances, its progress will likely be hindered by limited access to global supply chains and foreign innovation. Tehran's efforts to consolidate control over Iran's national infrastructure and direct its AI projects toward state objectives will likely impede its AI industry breakthroughs. As a result, Western AI companies involved in warfare-related AI development will likely become cyber-espionage targets for Iran, as its security apparatus tries to close the gap between its own military technology and its adversaries' capabilities.

The operational employment of AI in Iran's national security realm — in cyber and influence operations, military systems, and domestic repression — is almost certain to increase as Iran solidifies its AI strategy and development framework. Iran's security apparatus will likely use AI to increase the overall effectiveness of its social engineering and influence operations, overcoming the language and cultural barriers of its targets. In military systems, Iran will almost certainly pursue greater integration of AI into its missile and drone systems to enhance its deterrence posture. The experience Iran has gained in indigenously developing advanced drones and missiles through illicit procurement, domestic production, and reverse engineering will likely inform Iran's efforts to develop its own military AI systems for use in weapons, defensive infrastructure and sensors, and its domestic monitoring apparatus.

[167] *https://en.mehrnews[.]com/news/227218/Generative-AI-can-bring-BRICS-countries-up-to-600-billion*
[168] *https://www.tehrantimes[.]com/news/504259/Tehran-invites-BRICS-to-foster-co-op-in-nano-tech-bio-tech*
[169] *https://en.iz[.]ru/en/1806746/2024-12-13/first-meeting-international-alliance-field-ai-was-held-moscow*

Recorded Future reporting contains expressions of likelihood or probability consistent with US Intelligence Community Directive (ICD) 203: Analytic Standards (published January 2, 2015). Recorded Future reporting also uses confidence level standards employed by the US Intelligence Community to assess the quality and quantity of the source information supporting our analytic judgments.

About Insikt Group®

Recorded Future's Insikt Group, the company's threat research division, comprises analysts and security researchers with deep government, law enforcement, military, and intelligence agency experience. Their mission is to produce intelligence that reduces risk for customers, enables tangible outcomes, and prevents business disruption.

About Recorded Future®

Recorded Future is the world's largest threat intelligence company. Recorded Future's Intelligence Cloud provides end-to-end intelligence across adversaries, infrastructure, and targets. Indexing the internet across the open web, dark web, and technical sources, Recorded Future provides real-time visibility into an expanding attack surface and threat landscape, empowering customers to act with speed and confidence to reduce risk and securely drive business forward. Headquartered in Boston with offices and employees around the world, Recorded Future works with over 1,800 businesses and government organizations across more than 75 countries to provide real-time, unbiased, and actionable intelligence.

Learn more at recordedfuture.com