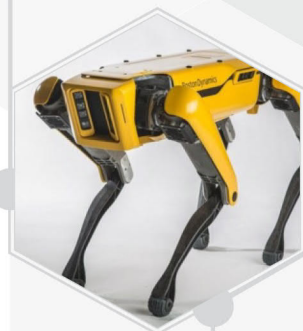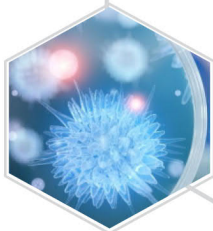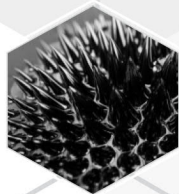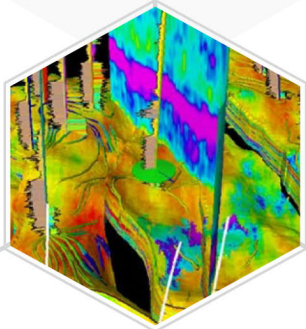# SCIENCE AND INNOVATION 2022

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ПРЕДСТАВИТЕЛЬСТВО РОССОТРУДНИЧЕСТВА В РЕСПУБЛИКЕ УЗБЕКИСТАН

НАУКА И ИННОВАЦИИ

Международная научная конференция молодых ученных «Наука и инновации»: сборник научных трудов: 20 октября, 2022 года / Министерство инновационного развития Республики Узбекистан, Центр передовых технологий. - Т.: «Калеон пресс», 2022. - 523 стр.

В сборник включены материалы, представленные участниками Международной научной конференции молодых учёных «Наука и инновации», отражающие наиболее актуальные проблемы исследований, проводимых в Республике Узбекистан, ближнем и дальнем зарубежье.

Авторы материалов – известные учёные и молодые специалисты в области биологии, медицины, геологии и геофизики, химии, физики, IT технологий и национальной системы научно-технической информации, активно участвующие в развитии инноваций, разработке прорывных технологий, отражающих результаты международного сотрудничества.

Сборник Международной научной конференции «Наука и инновации» представляет интерес для широкого круга исследователей, преподавателей высших образовательных учреждений, докторантов, магистрантов.

Сборник научных трудов Международной конференции «Наука и инновации» рассмотрен и одобрен на Ученом совете Центра передовых технологий Министерства инновационного развития Республики Узбекистан (протокол № 17 от 28 сентября 2022 г)

За содержание и достоверность представленных статей ответственность несут авторы.

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**Уважаемые участники
Международной конференции молодых ученых
«Наука и инновации»!**

Я рада приветствовать Вас на нашей очередной Международной конференции. Сегодня в Узбекистане широко реализуются реформы по преобразованию науки, и руководство нашей страны оказывает предельное внимание развитию науки и инновации, а также интеграции науки с производством. Создаются условия для выхода научных разработок в реальные продукты, для стимулирования стартап-движения создаются инновационные центры, и наш Центр передовых технологий также участвует в этом процессе: мы не только разрабатываем наукоемкие технологии и продукты, но и оказываем поддержку новым старап-компаниям через программу акселерации, помогая ученым, особенно молодым, претворять свои идеи и разработки в реальные продукты.

Наш Центр осуществляет свою деятельность по основным направлениям естественных наук – биология, физика, химия, геофизика и наноминералогия, развивает новые направления – фудомикс и клеточные технологии, и поэтому интересы проводимой нами научной конференции затрагивают практически все сферы естественных наук, а также сферу экономики и информационных технологий.

Недавняя пандемия заставила по-новому оценить роль науки и вклад информационных и цифровых технологий в решение актуальных проблем, сохранение стабильной экономики и обеспечение безопасности. Сегодня как никогда ощущается важность оперативного обмена информацией, особенной научной. Только благодаря объединению знаний, усилий и обмену полученным опытом возможно решать возникающие угрозы.

Надеюсь, что наша конференция станет именно той площадкой, на которой ученые разных стран и областей науки смогут обменяться своими мнениями, обсудить достигнутые результаты и выработать конкретные практические рекомендации, способствующие совершенствованию и дальнейшему развитию научной инфраструктуры.

Желаю успехов всем участникам конференции!

**Заместитель министра,
директор Центра передовых технологий Турдикулова Ш.У.**

ПЛЕНАРНЫЕ ДОКЛАДЫ

OVERVIEW OF AI ETHICS IN CONTEMPORARY EURASIAN SOCIETY

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Extended Abstract

All most all the Central Asian and South Asian countries have started initiatives related to e-government, digitalization, smart cities and educational AI but few of these have explicitly enacted administrative policies related to AI technologies or demonstrated their seriousness towards Responsible AI. Most of the new innovation technologies and hi-tech instruments in the region are being imported from the other neighboring tech leaders which usually export them as a package along with their own regulatory instructions designed based on their own principles of AI Ethics. Central Asian and South Asian is striving to develop a contextualized ethico-legal infrastructure to accommodate the rapid technological advancements and to improve their investment climate in order to secure a reputable position among the techno-responsible world community. Governments have understood that the Responsible AI technologies will make it easier for them to adopt new AI applications which will not only be inclusive but will bring local and regional benefits.

As a result of global feedback from the numerous ongoing projects of digital transformations in Central and South Asia, states' attention has started shifting towards Responsible AI instead of bulk technology manufacturing and digitization. Georgia is taking lead in AI Responsibility among the other countries in the region. Majority of the countries in the region scored less than the average global score on Responsible AI Index but most of these have started elaborating AI Policy frameworks. Regardless of domestic legislative issues, it is evident from the 2021 data that governments in the region have understood the gravity of the situation that the use of Responsible AI in public institutions can yield significant benefits for their populates. However, on a more pragmatic level, the data suggests that almost all the countries in Central Asia and South Asia are facing numerous challenges in building their capacities in meeting the expectations of Responsible AI. Region as a whole is lagging behind in comparison to their immediate neighbors.

Turkey which stands at the junctions of Europe and Asia, has recently published its National Artificial Intelligence Strategy for 2021-2025 and aims to become the top 20 country for AI in near future. Ministry of Industry and Technology and the Digital Transformation Office of the Presidency, the initiators of this strategy

are planning to establish a National Artificial Intelligence Strategy Screening Committee which will help in designing national policy on all the elements of AI. The underlying philosophy behind enacting this National AI Strategy is to create bases for a strategically important investment plan for Turkey. The country plans to focus on six strategic priorities – educating citizens in AI and increasing employment in the sector; supporting research activities; entrepreneurship and innovation in the field of AI; developing access to quality data and technical infrastructure; making arrangements to "accelerate socioeconomic adjustment;" improving international cooperation; and accelerating structural and workforce transformation. National Artificial Intelligence Strategy for 2021-2025 promises "an active contribution" to the regulatory studies and standardization processes of international organizations in the field of cross-border data sharing with reliable and responsible AI. This demonstrates the Turkish AI readiness to reap the maximum benefits of AI.

Private sector in Georgia comparatively seems more ready as it was able to introduce cost effective and efficient products for the public during the pandemic. Government on the other hand also facilitated the general public by providing remote services. Georgian academia has taken keen interest in promoting state's agenda of digital transformation which shows the Georgia's seriousness to improve its intellectual logistical infrastructure. Readiness of public sector and academia serves as an extension of state's readiness and indicates that the outcomes of the state's policies are spreading their tentacles on all the stakeholders. Data demonstrates that the government of Georgia do care about the privacy and protection of online users as compared to the other key states in the region. However, there are also risks which are technical in nature that can arise as a result of systemic misuse of AI, techno-digital glitches, and mismanagement of personal data which needs to be tackled by the state.

Last year, Ministry of Digital Development and Transport of the Republic of Azerbaijan organized a three-day virtual sub-regional consultation to discuss the draft "Recommendations on the ethics of Artificial Intelligence". However, this year's data exhibits a huge gap in state policies with regard to responsible AI which shows that the country stands on above average in terms of its global and regional performance in digital government. Earlier this year, a high level international conference on "Artificial Intelligence in Digital Governance" organized by E-GOV Development Center of the State Agency for Public Service and Social Innovations under the President of the Republic of Azerbaijan brought together more than 50 well-known speakers from more than 20 countries, representatives of international organizations, engineers, artificial intelligence specialists and futurists to discuss some of the most important issues in the field of artificial intelligence. According to the data, Azerbaijan is performing worst as compared to its regional counterparts due to the lack of state lead policies, accountability, transparency, and inclusivity related to AI.

Regardless of its area and huge human capital, India is listed among the least performing governments on Responsible AI Index which demonstrate that there is still room for improvement. India AI an initiate of Indian government lunched last year is serving as a dedicated AI Portal and a central hub for everything related to AI in India. The portal was expected to act as a one-stop-shop for all AI-related

developments and initiatives in India but is mostly being used for sharing academic and journalistic news. Under the umbrella of National Education Policy 2020, National Council of Educational Research and Training (NCERT) is preparing a new National Curriculum Framework for School Education with an aim to introduce a basic course on AI at the secondary level. The large Indian economy is expected to promote a robust data infrastructure and strong systems of governance by using AI integrated technologies. The NITI Aayog, a public policy think tank of the Government of India, have published comprehensive report on Responsible AI in two parts which highlights the India's position on responsible AI in detail.

The largest Central Asia country Kazakhstan's first national report on the labor market prepared by the Center of Labor Resources Development raised its reservations that around 52 percent future jobs in Kazakhstan are at a risk of automation. It was mentioned in the report that more than 85 million jobs could disappear in future, while 97 million more could emerge that are more adapted to the division of labor between people, machines, and algorithms. Kazakh government is trying to incorporate elements of digitalization in almost all the public institutions, but how much they are concerned about Responsible AI is not vivid up till now. Kazakh President said in an international conference, "This is a new world where new technologies lead us fast. What it will end up like, beautiful or frightening, what future we will leave to future generations depends on our common efforts, the efforts of engineers, IT specialists, economists and most importantly, politicians." Some practical steps have not been taken yet for its implementation; however, Kazakh academia is striving to develop national capacity for research in Artificial Intelligence at its own level. Unfortunately, note many voices are being raised in support of Responsible AI.

At present, Responsible AI is not among the priorities of policy makers in comparison to some of the imperative technological issues such as capacity building of state employees, data vulnerability, cyber security etc. Governments in the region have not yet publicly endorsed their position on Responsible AI. However, a zoomed-out picture shows a ray of hope in the form of engagement of other stakeholders including academicians who are addressing the challenges around artificial intelligence from both an ethical and legal point of view. By looking at the ongoing progression to strengthen the overall ethico-moral infrastructure related to technological innovations in Central and South Asia, it can be predicted that states will soon start the prioritizing and practicing responsible AI.

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THE IMPACT OF THE CRISIS ON THE SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF THE TERRITORY. SIGNALS OF CHANGES, EXAMPLES

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Abstract. The article analyzes the existing technological trends and their influence on society. Conclusions are drawn with an emphasis on the governmental role in the process of adaptation of the new technologies.

Key words: technological trends, crisis, challenges, artificial intelligence, security, online learning, eco trends, telemedicine.

The modern crisis caused by the global COVID-19 pandemic has led to a severe global recession with differential impacts within and across countries [1]. However, new challenges cause new solutions. As Peter Tilth, a co-founder of PayPal, has mentioned in his book «Zero to One»: «New technology has never been an automatic feature of history» [2]. The changes have to be boosted by the expectations society has or difficulties that appeared. The crisis has a dual role, the