ISSAI

NAZARBAYEV UNIVERSITY | Institute of Smart Systems and Artificial Intelligence

ANNUAL REPORT

2025

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INTRODUCTION

Institute of Smart Systems and Artificial Intelligence (ISSAI) continues to advance AI development in Kazakhstan by building locally relevant technologies, supporting researchers, and sharing expertise across the country. Our Annual Report 2025 highlights a year of strong progress in research, product development, partnerships, and public impact.

One year after the official release of ISSAI KAZ-LLM, we are proud to present the next wave of AI systems that grew from this foundation and expand Kazakhstan's capabilities in generative and applied AI. In 2025, ISSAI introduced and scaled a portfolio of models and tools: Beynele, a culturally aware multilingual text-to-image generation model; MangiSoz, a technology combining transcription, voice synthesis, translation, and OCR-enabled text extraction; Oylan, our multilingual, multimodal model, that can reason across text, image, and audio; and TilSync, a real-time transcription and translation solution.
Alongside technology development, ISSAI remains committed to strengthening Kazakhstan's human capital in artificial intelligence.

Throughout 2025, we continued designing and delivering professional upskilling initiatives for specialists from government, quasi-public organizations, and the private sector—helping institutions adopt modern AI tools responsibly and effectively.

Our Mission. ISSAI's mission is to advance world-class Artificial Intelligence research by developing impactful AI technologies, cultivating scientific talent, and fostering international collaboration that supports Kazakhstan's digital transformation and sustainable development.
Our Goal. Our goal is to position Kazakhstan as a regional leader in Artificial Intelligence by building a strong research ecosystem, creating globally competitive AI models, training the next generation of AI researchers and engineers, and delivering solutions that address societal, industrial, and governmental challenges.

To ensure this progress is trusted and sustainable, ISSAI is guided by clear **Ethical Principles:** Societal Well-Being, Human-Centered Values, Transparency, Technical Resilience and Robustness, and Accountability. These principles shape how we build, evaluate, and deploy AI—so that innovation translates into measurable value for people, institutions, and the country.

As we look ahead, ISSAI remains dedicated to solving real-world challenges and accelerating positive change through ethical, high-impact AI. We invite you to explore the work, milestones, and collaborations that shaped ISSAI in 2025.

FOUNDING DIRECTOR'S MESSAGE

The pace of artificial intelligence development continues to accelerate, with breakthroughs in multimodal reasoning, autonomous agents, and edge computing constantly reshaping the global technological landscape. Amidst this rapid evolution in 2025, the Institute of Smart Systems and Artificial Intelligence (ISSAI) at Nazarbayev University further cemented Kazakhstan's position as a creator of sovereign, culturally aligned generative AI. Our first generative AI model, KazLLM, has now surpassed 140,000 downloads, achieving widespread local adoption and significant international visibility, notably getting cited by Yann LeCun as a prime example of sovereign AI. Furthermore, we had the profound honor of hosting AI luminaries such as John Hopcroft, Peter Norvig, and Kai-Fu Lee at our institute during 2025.

Building on the success of KazLLM, the past year marked our transition toward developing a complete, homegrown generative AI stack. At our landmark "ISSAI Momentum" event, we unveiled Oylan 3, an advanced language-audio-vision model; MangiSoz 3, a comprehensive speech and translation engine; Beynele 2, our culturally grounded image generator; and the TilSync 2 live translation platform. While we are excited to develop enterprise-ready commercial products, our institute remains deeply committed to high research performance and reproducible science. We actively share our models and datasets on Hugging Face and GitHub. For instance, we recently released Qolda, a compact, 4-billion-parameter open-source language-vision model optimized for edge devices.

Beyond core generative AI tech, our collaborative research is intensifying across diverse fields, including robotics, the circular economy, nutrition, and education. For 2026, a primary goal is to deeply intertwine ISSAI with the rest of Nazarbayev University (NU) and the broader Kazakhstani academic community to foster and sustain a vibrant, interdisciplinary research ecosystem.

Moreover, we continue to expand our educational outreach through our Summer Research Program (SRP), which saw a record number of applicants and participants in 2025. In line with the "Study in Kazakhstan" initiative, we will elevate the SRP into a truly global program in 2026.

President Kassym-Jomart Tokayev has officially designated 2026 as the "Year of Digitalization and Artificial Intelligence". In response to this national mandate, ISSAI will significantly intensify its research and commercial efforts. We will continue to push the boundaries of generative AI and secure computing, guided by our principle of "AI for Good," as we strive to serve national priorities, preserve Kazakhstan's cultural heritage, and ensure our technologies remain accessible to all.

I invite our partners, researchers, and the broader community to continue collaborating with us on this exciting journey as we build a brighter, AI-empowered future for Kazakhstan and the world.
Prof. H. Atakan Varol
Founding Director of ISSAI

ISSAI TEAM

ISSAI TEAM

At ISSAI, our work is driven by a dynamic and highly motivated team of young researchers and engineers united by a shared commitment to advancing Artificial Intelligence in Kazakhstan. Many of our specialists are graduates of leading Kazakhstani universities as well as top international institutions, bringing together diverse academic backgrounds and global perspectives.

Beyond engineering innovative generative AI systems, our team actively contributes to the global scientific community through rigorous research and collaboration. ISSAI researchers regularly publish in leading Q1 international journals and present their findings at major international conferences, strengthening Kazakhstan's presence in the worldwide AI ecosystem. This combination of scientific excellence, technical expertise, and genuine dedication to national technological progress defines the spirit of our team.

Yerbol Absalyamov
Executive Director

Dr. Huseyin Atakan Varol
General Director

Amina Baikenova
Acting Deputy Director of Product and External Affairs

Madina Abdrakhmanova
Deputy Director of Product and External Affairs
(currently on maternity leave)

Dr. Azamat Yeshmukhametov
Head of ARMS Laboratory

Gibrat Kurmanov
General Manager

Daulet Aliyev
Legal Counsel

Dana Makhanova
General HR Manager

Rinat Smirnov
Chief Accountant

Askat Kuzdeuov
Lead Data Scientist

Dr. Zhanat Makhataeva
Senior Data Scientist

Saida Mussakhojayeva
Senior Data Scientist

Aspandiyar Nurimanov
Data Scientist

Mamyrbek Parakhat
Data Scientist

Rakhat Meiramov
Data Scientist

ISSAI TEAM

Anuar Aryngazin
Data Scientist

Batyr Arystanbekov
Data Scientist

Akylbek Maxutov
Data Scientist

Nartay Aikyn
Data Scientist

Tomiris Rakhimzhanova
Data Scientist

Vladimir Albrekht
Data Scientist

Auyeskhan Alibekov
Junior Data Scientist

Aibota Sanatbyek
Junior Data Scientist

Adema Sharipova
Junior Data Scientist

Nurgaliyev Shakhizat
Senior Computer
Engineer

Makat Tlebaliyev
Computer Engineer

Zhaxylyk Tursunbayev
Computer Engineer

Aikerim Bissarinova
IT Product Manager

Nail Kamilov
Software Engineer

Galammadin Askar
Software Engineer

Akjan Yerkin
Front-End Developer

Sanzhar Sapar
Software Engineer

Nurgul Shymyrbaeva
Budget Manager

Aliya Tussupova
Senior PR manager

Aigerim Sarsenova
Senior External Affairs
Manager

ISSAI TEAM

Gauhar Orazbekova
Grant Coordinator

Alaidar Amirseiit
Government Relations Manager

Madina Satybaldina
Administrative Manager

Aida Kaliyeva
Social Media Manager

Dr. Darkhan Zholtayev
Senior Researcher

Dr. Inara Tusseyeva
Senior Researcher

Mohammad Shoaib Babar
Research Assistant

Almubdi Mutaikhan
Research Assistant

Daniil Filimonov
Research Assistant

Hamad Hassan Awan
Research Assistant

S. Olarewaju Olagunju
Research Assistant

Dr. Gourav Moger
Senior Researcher

Venera Spanbayeva
Data Moderator

Moldir Orazalinova
Data Moderator

Gulim Kabidolda
Data Moderator

Assel Kospabayeva
Data Moderator

Playground

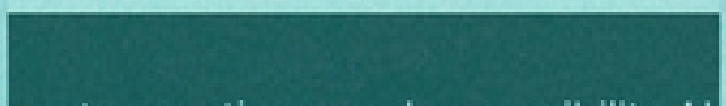
by ISSAI

issai.kz

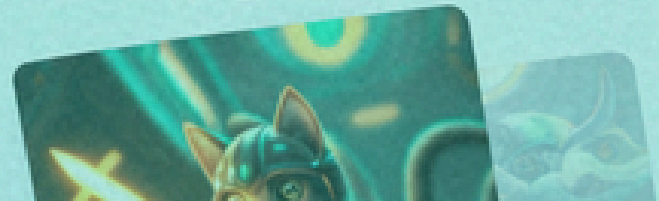
MangiSoz3.0 —
ISSAI Foundational Speech Model

Oylan3.0 —
Language-Audio-Vision Model

TilSync2.0 —
Real-Time AI Subtitles



Beynele2.0 —
Multilingual AI Image Generator



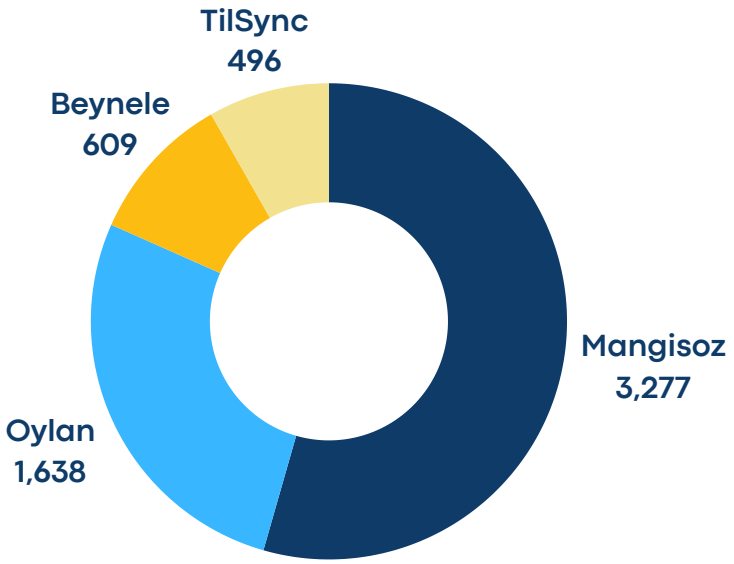
ISSAI AI PLAYGROUND

ISSAI AI Playground is a unified platform that brings together ISSAI's most important generative AI products and models within a single, integrated environment. The platform was designed to consolidate access to these technologies, ensuring a consistent user experience and simplifying interaction with multiple AI systems through a standardized interface.

Within the Playground, users receive an equal allocation of tokens across models, enabling transparent and balanced experimentation with different generative capabilities. ISSAI continuously improves the performance and reliability of the models hosted on the platform, with updated versions and new features typically introduced every two to three months. The ISSAI AI Playground currently includes models and systems such as Oylan, Beynele, TilSync, MangiSoz forming a cohesive ecosystem of generative AI technologies developed by ISSAI.

Usage Policy

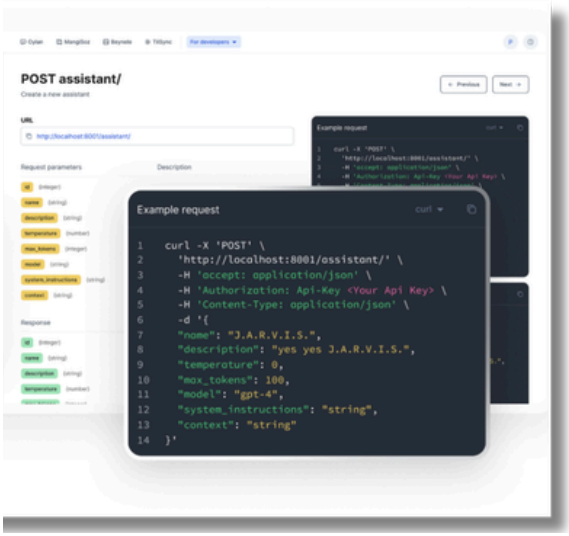
The ISSAI AI Playground is designed to ensure both accessibility and scalability for a broad range of users: from students and researchers to enterprises and institutional partners. Each product within the Playground offers an introductory free usage tier, allowing users to explore core capabilities, evaluate performance, and integrate services into their workflows without initial financial commitment. Importantly, this free access is provided individually for every product, enabling users to independently assess each model's functionality and relevance to their specific needs.



2025 Subscriptions and Active Usage (issai.kz)

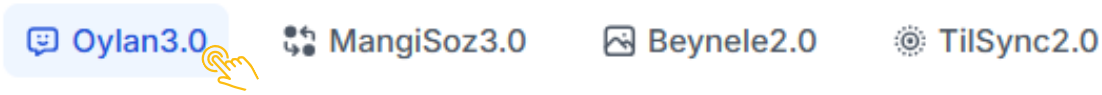
For developers

The ISSAI AI Playground provides a structured and secure integration framework for developers seeking to embed AI capabilities directly into applications, services, and enterprise systems. Developers authenticate via valid credentials, create a new key through the dedicated API Keys interface, assign a name, and securely store the generated key upon creation. For security reasons, the key is displayed only once and cannot be retrieved thereafter. Through this, ISSAI ensures that its generative AI technologies are not only accessible via user interfaces, but also fully programmable enabling integration, automation, and product innovation across diverse digital environments.



Oylan: Language-Audio-Vision Model

Oylan represents ISSAI's next-generation multilingual and multimodal foundation model, designed to unify language, audio, and visual intelligence within a single advanced reasoning system. Developed as a core component of Kazakhstan's sovereign generative AI stack, Oylan integrates text understanding, speech processing, and visual perception into a cohesive architecture capable of operating across diverse real-world scenarios. Its multimodal design enables seamless interaction between modalities, allowing the model to analyze, reason, and respond with contextual depth and technical precision. The ISSAI Free Tier, offered through the API service with lower rate limits for testing purposes, is available at 0 ₸ and includes 50,000 tokens for Oylan; upon payment of 1,000 ₸, users receive 250,000 tokens for Oylan, with subsequent token usage priced proportionally according to consumption.



Multimodal Capabilities

Visual Intelligence

Oylan performs advanced image captioning, optical character recognition (OCR), and chart and table comprehension. The model is capable of interpreting structured and unstructured visual inputs, extracting semantic meaning, and supporting analytical reasoning over graphical data. Users can upload images directly or provide image URLs for analysis and attach PDF documents for contextual understanding and reasoning.

Audio Intelligence

The model supports speech recognition, speech-to-text translation, automatic language identification, and sound or music analysis. This enables real-time transcription, multilingual speech understanding, and acoustic pattern interpretation across professional and research environments. Users can upload audio files for transcription or analysis record speech directly via microphone input.

Textual Reasoning

Oylan demonstrates improved reasoning performance, reduced hallucination rates, and robust multilingual capabilities. It provides strong support for Latin-script Kazakh and other language formats, contributing to inclusive and regionally adapted AI deployment. Oylan supports text prompts for standard conversational interaction.

Extended Integration

The system further includes a **Deep Think** mode for advanced reasoning tasks, enabling more structured analytical processing. In addition, Oylan supports **Retrieval-Augmented Generation (RAG)** workflows, allowing integration with external knowledge bases for domain-specific, document-grounded responses. Through Real-Time Web Search functionality, Oylan retrieves and incorporates up-to-date information, enabling responses grounded in current data. This significantly enhances factual reliability and situational awareness in dynamic contexts.

MANGISOZ

MangiSoz: Speech and Text Translation

MangiSoz is ISSAI's comprehensive speech and text translation platform, designed to deliver seamless multilingual communication across modalities. Built to serve government, enterprise, and educational environments, the system unifies transcription, translation, OCR, document processing, and expressive voice synthesis. MangiSoz currently supports 11 languages: Arabic, Azerbaijani, English, Spanish, French, Kazakh, Kyrgyz, Russian, Turkish, Uzbek, and Chinese. It provides 250,000 free characters upon registration. For extended usage, the platform operates under a flexible Pay-as-you-go model with one-time payments and no subscription requirements (1,000,000 characters cost 9,000 KZT).

Text

MangiSoz allows users to translate content through multiple input formats. Text can be typed, pasted, or dictated via microphone. Spoken input is automatically transcribed and processed in real time. Users may choose to receive output as: translated text, synthesized audio, or a combined audio + transcription format. Integrated Optical Character Recognition (OCR) enables text extraction from images. Translated output can be voiced in either male or female voices, with selectable target languages as well as downloaded as an audio file.

File Upload

MangiSoz supports image translation and document processing through file upload.
Image formats (with OCR support): JPG, PNG, JPEG (up to 5 MB). Document formats: PDF, DOCX, PPTX, XLSX, MP3, WAV. For images, the system preserves the original layout and visual structure while replacing the detected text with translated content. For documents, translated versions are generated while maintaining formatting integrity. Audio files are transcribed and translated within the same unified pipeline.

Expressive TTS

MangiSoz includes advanced expressive Text-to-Speech (TTS) capabilities across all 11 supported languages. Each language offers multiple speakers and voice options. The system supports seven emotional tones: neutral, angry, fearful, happy, sad, surprised, and disgusted, allowing speech output to reflect context and intent more naturally.
To enhance realism, users may embed expressive tags directly within text. Supported tags include: "Chuckle", "Singing", "Groan", "Cough", "Laugh", "Sigh", "Stutters", "Yawn", "Sniffle", "Whispers", "Long pause", "Gasp", "Tsking", "Smacks lips", "Chewing", "Swallows", "Hiccups", "Burps".

Diarization

MangiSoz 3.1 introduces Speaker Diarization, enabling automatic separation of speech by speaker within a single recording. After uploading an audio file, the system transcribes the content and generates a structured transcript with clearly identified speakers. Users may rename speakers, manually define the number of participants (up to 20 voices), and select processing profiles such as Meeting, General, or Telephonic to optimize performance. Transcriptions can be copied, downloaded as TXT, or exported in JSON format. MangiSoz also supports live microphone recording and YouTube link processing, applying the same diarization pipeline across formats.

BEYNELE

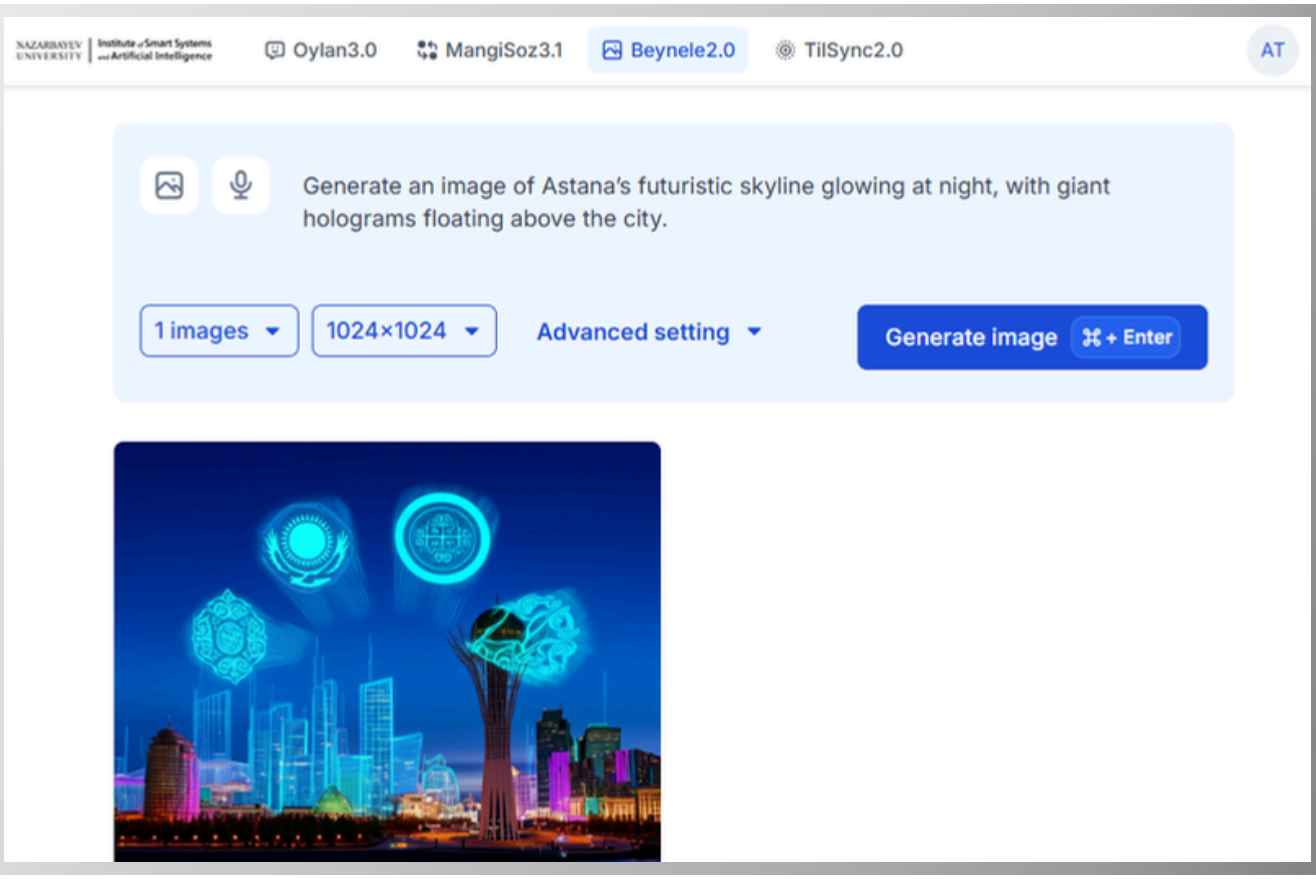
Beynele — Multilingual AI Image Generator

Beynele is ISSAI's advanced generative image model, designed to transform ideas into high-quality visual content through natural language interaction. Supporting prompts in Kazakh, Russian, and English, the system enables users to create both realistic and artistic imagery with precision and contextual awareness. Beynele offers a free tier that includes up to 5 generated images at no cost. Beyond this limit, the service operates under a transparent Pay-as-you-go model, with each additional image priced at 30 KZT.

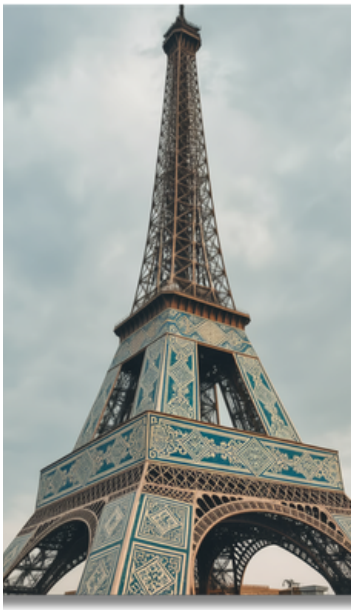
Unlike conventional image generators, Beynele is built with cultural intelligence at its core. The model has been carefully trained and aligned to reflect Kazakhstan's identity, aesthetics, traditions, and social context, enabling it to "think" from a local perspective while maintaining global creative standards.

Beynele supports multiple input modalities. In addition to text prompts, users may provide one or two reference images, allowing the system to generate new content that synthesizes shared visual elements according to the provided instructions. For enhanced accessibility, prompts may also be dictated through a microphone. Spoken instructions are automatically transcribed and interpreted by the model, creating a seamless voice-to-visual workflow.

By combining multilingual understanding, multimodal input, and culturally aware generative modeling, Beynele establishes a new standard for regionally grounded yet globally competitive AI creativity.



BEYNELE



TILSYNC

TilSync is ISSAI's real-time subtitle generation platform, developed to enhance live communication across professional, academic, and public environments. Designed as a lightweight desktop application, TilSync delivers instant speech-to-text transcription and automatic multilingual translation during live events, meetings, lectures, and broadcasts.

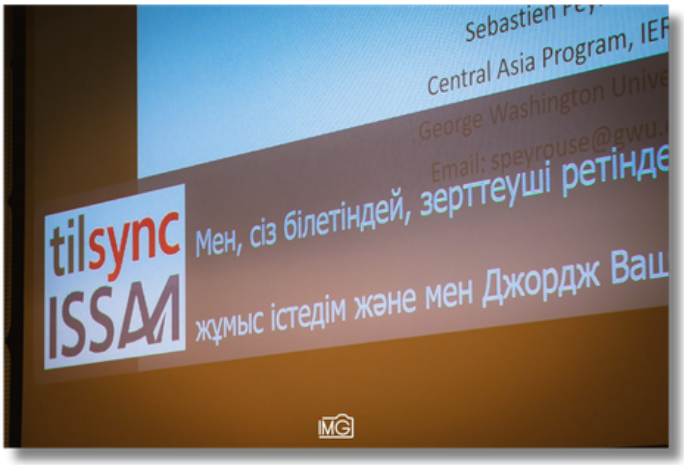
Oylan3.0 MangiSoz3.1 Beynele2.0 TilSync2.0

The system captures spoken language in real time and converts it into accurate, readable subtitles with minimal latency. Built-in automatic translation allows speech to be instantly rendered across Kazakh, Russian, and English, enabling seamless multilingual interaction within a single session.

A distinctive feature of TilSync is its ability to display subtitles over any active application. Whether used during video conferences, presentations, livestreams, or offline events, subtitles remain visible as a non-intrusive overlay, ensuring accessibility without disrupting workflow. TilSync supports inclusive communication by making spoken content immediately accessible to multilingual audiences, international participants, and individuals requiring captioned environments.

To encourage adoption and experimentation, TilSync offers a free starting tier that includes 10 minutes of translation at no cost. Beyond the initial allocation, the platform operates under a transparent Pay-as-you-go model with no subscription requirement. Users may purchase token packages as needed, with 10 minutes of translation priced at 1,000 KZT.

By combining real-time transcription, instant translation, and universal overlay capabilities, TilSync strengthens live communication across languages and contexts.



MANGITAS

MANGITAS

ISSAI has developed the Mangitas series - a comprehensive, secure AI solution engineered to operate fully within air-gapped and government-certified environments. Built under resource constraints yet driven by strong in-house expertise, the Mangitas Inference Server was assembled using commercial off-the-shelf components to enable reliable deployment of ISSAI's AI models, including Oylan, Mangisoz, Beynele, and TilSync. Today, Mangitas powers these models in production. More than a high-performance server, Mangitas is a foundational enabler for adopting advanced AI without compromising security. Its key innovation is the ability to package large-scale, complex AI systems into a compact, dependable, and secure hardware platform-ready for mission-critical use.

The Security Dilemma of Modern AI

The Mangitas series by ISSAI is a custom-built, secure AI inference server engineered for government and enterprise sectors where data sovereignty and cybersecurity are non-negotiable. The security dilemma of modern AI lies in the fact that, while artificial intelligence has become essential for digital transformation, it simultaneously presents a critical challenge for public institutions and enterprises operating in sensitive sectors. The demand for advanced AI capabilities often collides with the absolute requirement for data security and national sovereignty. At the same time, cloud-based deployment is frequently prohibited due to the risks associated with sensitive data exposure, national security concerns, and strict regulatory compliance.

Trust & Credibility

Mangitas is not a conceptual prototype, it is a proven platform shaped by real operational needs. Built for secure, controlled deployments, it enables AI adoption in environments where confidentiality, compliance, and continuity are critical, including isolated networks that cannot rely on external cloud services. This trust is reinforced through practice: Mangitas is already deployed for internal use in educational and quasi-governmental institutions. In these settings, reliability, predictable maintenance, reproducible configurations, and transparent administration matter as much as raw performance - areas where Mangitas has demonstrated readiness.

MANGITAS

Mangitas 01: Dedicated AI for Critical Tasks

ISSAI offers two distinct models configured for different operational needs. Both are built on the same foundation of security and performance.

On March 28, ISSAI introduced Mangitas 01 - ISSAI's first inference-server which is purpose-built for organizations that need a powerful, dedicated platform to support a single mission-critical AI function. Optimized for focused deployments, it provides a streamlined and reliable environment for specialized applications, where consistent performance, controlled operation, and clear accountability are essential. By concentrating resources on one primary workload, Mangitas 01 delivers predictable throughput and simplified administration, making it well-suited for high-priority use cases that must run continuously in secure, regulated settings.

Mangitas 01 is best suited for secure, single-purpose AI operations where data sovereignty and operational control are non-negotiable. It is optimized to run Mangisoz - ISSAI's speech and translation real-time transcription and multilingual translation across Kazakh, Russian, English, Turkish, and Chinese.

Its core value lies in delivering fast, reliable, and fully local language processing within a protected perimeter. By keeping audio and text workflows on-premise, Mangitas 01 helps organizations support sensitive meetings, services, and communications without exposing confidential data to the public internet or external cloud dependencies.

Nazarbayev University Data Center (Server room)

MANGITAS

Mangitas 02: The Complete AI Ecosystem

On July 17, ISSAI presented Mangitas 02 - versatile, high-performance inference platform engineered for institutions that need more than a single AI capability. Configured to run the full suite of ISSAI's advanced models in parallel, it enables organizations to consolidate multiple AI workloads—language, speech, multimodal understanding, image generation, and real-time subtitles—within one secure, locally controlled environment. In this setup, Mangitas 02 becomes the foundation for an internal AI hub: scalable, mission-ready, and designed to support diverse teams and departments simultaneously.

Designed as a full-spectrum, multi-purpose AI hub, Mangitas 02 is particularly well suited for organizations seeking to establish a centralized AI capability that can serve both operational and creative demands. Whether supporting analytical workflows, automating routine knowledge tasks, enabling multilingual communication, or accelerating content production, the system provides a unified infrastructure for deploying AI across everyday processes—without dependence on external cloud services.

Mangitas 02 supports ISSAI's flagship models and products, allowing institutions to deploy a complete portfolio of capabilities through a single platform:

- Mangisoz (Speech & Translation Suite): Enables secure, real-time speech-to-text transcription and multilingual translation for meetings, calls, and institutional communications.
- Oylan (Multimodal AI, Text, Image, Audio): Provides advanced multimodal understanding and reasoning, integrating language with visual and audio signals for richer, context-aware assistance.
- Beynele (AI Image Generator with Kazakh Cultural Context): Creates high-quality visual content with strong relevance to Kazakh language, identity, and cultural motifs, supporting design, outreach, and educational materials.
- TilSync (Real-Time AI Subtitle Service): Delivers live subtitles and translation overlays for events, lectures, accessibility use cases, and hybrid meetings.

At its core, Mangitas 02 is built to operationalize a sovereign AI ecosystem6 one that an organization can run on-premise, govern internally, and adapt to its own requirements. This makes it an ideal solution for institutions that manage sensitive information, operate under strict compliance frameworks, or simply want to ensure long-term technological independence. By hosting a broad set of AI capabilities locally, Mangitas 02 empowers organizations to support complex, multi-domain tasks from data analysis and reporting to multilingual communication, media production, and real-time user services through a single, unified AI platform.

MANGITAS

Security and Sovereignty

Every Mangitas server is built on four pillars of trust and performance:

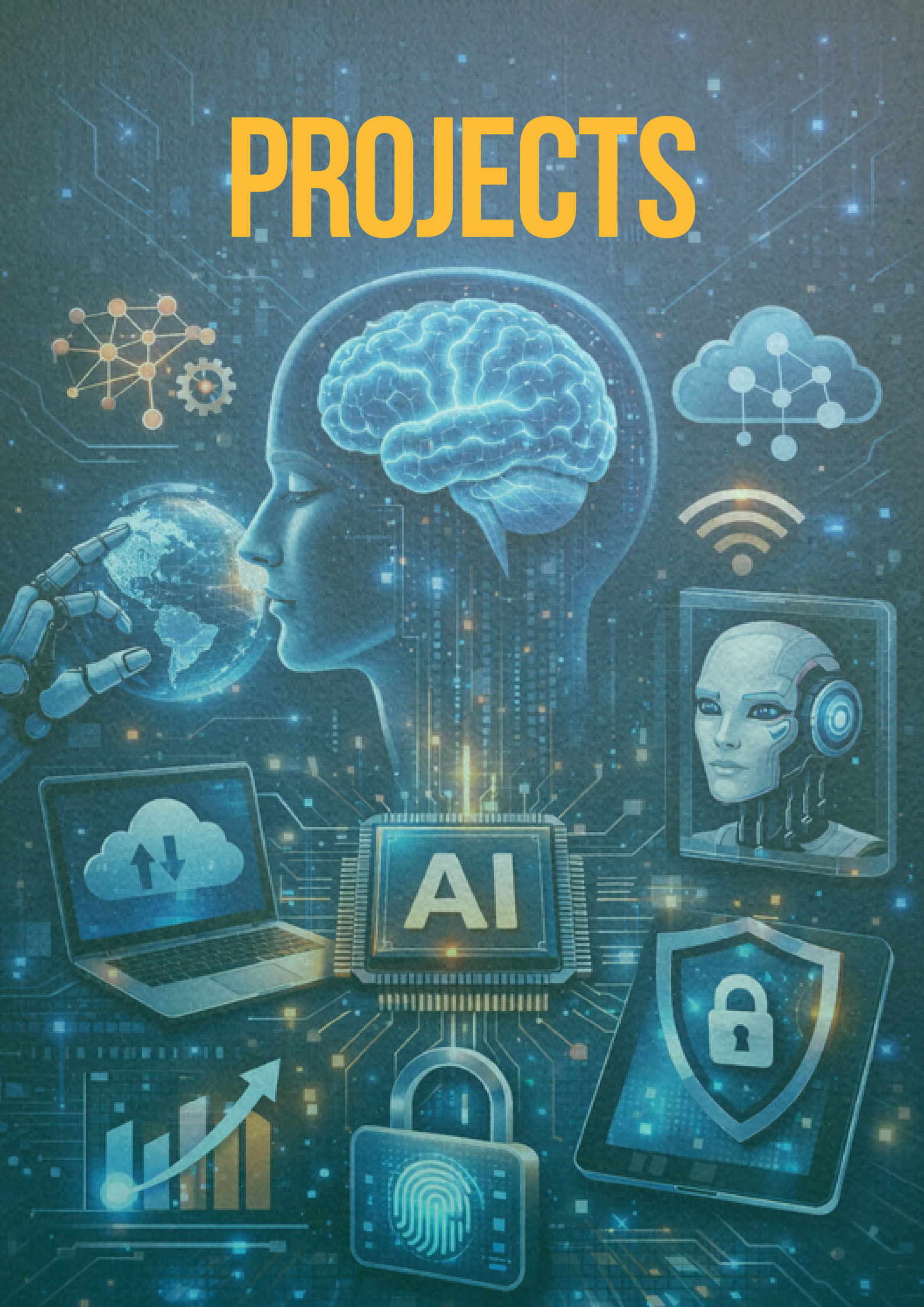
- Cybersecurity Compliance: Fully aligned with Kazakhstan's national legislation on cybersecurity and data protection, including secure audit logging, encryption, and controlled access.
- Total Data Sovereignty: Ensures that the user has full control over data processing by eliminating any dependency on external cloud providers. Designed specifically for closed government networks.
- Optimized AI Performance: Includes tailored optimization of large language models for high-speed, low-latency local inference, ensuring real-time results.
- Plug-and-Play Integration: Easily deployable via secure gateways like the Government Intranet, allowing for fast and seamless integration into your existing infrastructure.

Presentation of Mangitas 02 at ISSAI Update Press-Conference, July 17, 2025

Technical Specifications

- Chassis: Custom-modified 5U rackmount enclosure adapted for airflow and multi-GPU layout.
- AI Acceleration: Features a multi-GPU system (4x configuration) with 192 GB total VRAM.
- Compute Core: A high-performance, multi-core workstation-grade processor with a liquid-cooled solution.
- Memory: 128 GB of large-capacity ECC memory with a high-bandwidth DDR5 architecture.
- Storage: 8 TB enterprise-grade solid-state drive with an NVMe interface for high-speed loading.
- Power: Dual-redundant 3.3 kW high-wattage PSU configuration with smart power management.

PROJECTS

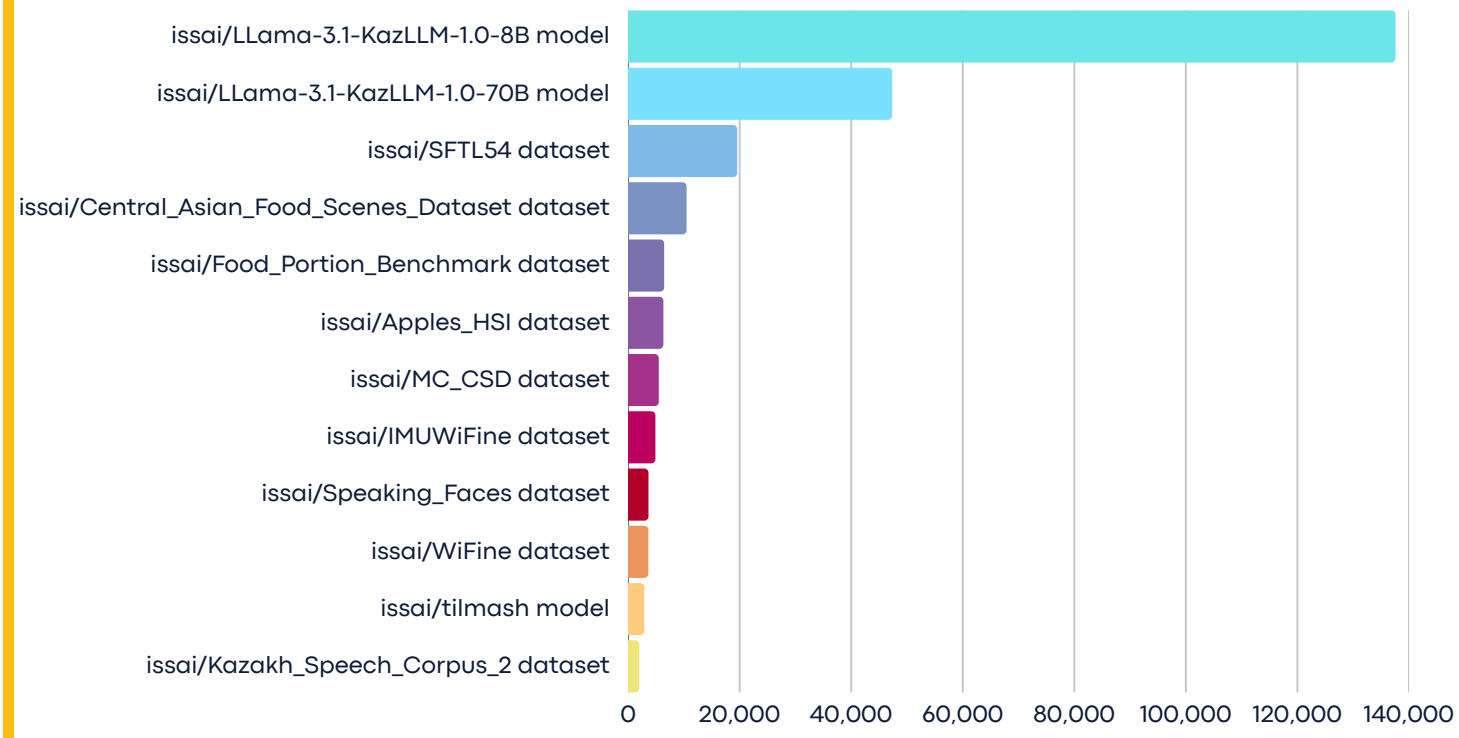


ISSAI PROJECTS

Over the past year, ISSAI continued to strengthen its global research presence through the open release of AI models and datasets on Hugging Face. The growing number of downloads reflects increasing international interest in ISSAI's work, particularly in language technologies, multimodal AI, speech processing, and data resources for Central Asian languages and cultures.

ISSAI's flagship large language models, including the LLaMA 3.1 KazLLM 1.0 8B and LLaMA 3.1 KazLLM 1.0 70B, have attracted the highest adoption, demonstrating strong demand for high-quality Kazakh-language AI solutions. At the same time, specialized datasets supporting speech recognition, computer vision, and food and cultural research have gained steady traction among researchers and developers worldwide.

The chart below illustrates download activity across ISSAI repositories, highlighting the expanding reach and practical impact of our open AI ecosystem.



The strong adoption of ISSAI's flagship AI models demonstrates the growing demand for advanced language technologies tailored to regional and multilingual contexts. The KazLLM 1.0 8B has surpassed 137,000 downloads, reflecting its broad usability and efficiency for real-world applications, while the more powerful KazLLM 1.0 70B has reached over 47,000 downloads, highlighting strong interest in high-capacity Kazakh language modeling.

ISSAI PROJECTS

In addition to the models highlighted in the chart, issai.nu.edu.kz also hosts several other models and datasets with fewer than 50 downloads:

- issai/Qwen3_VLA_4B_whisper_original_init_thinking,
- issai/faster-whisper-0112v0_4-fp16, issai/KazATTSD,
- issai/MMLU-Pro_Kazakh_Russian,
- issai/GPQA_Kazakh_Russian,
- issai/orpheus_11lang_nov27_350k_prod_v1,
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- issai/ARC_Kazakh_Russian,
- issai/MMLU_Kazakh,
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- issai/faster-whisper-tilsync-october9-fp16,
- issai/faster-whisper-turkic-augmented-1e-5-chapter3-cp20451,
- issai/faster-whisper-kk,
- issai/faster-whisper-turkic-augmented-1e-5-cp37293-11lang-1e-5-chapter3-cp30582
- issai/audio_fleurs_eval,
- issai/faster-whisper-turkic-augmented-1e-5-chapter4-cp30075.

ISSAI continues to develop and improve these releases, because for ISSAI it is important not only to build new technologies, but also to share our experience with the broader community.

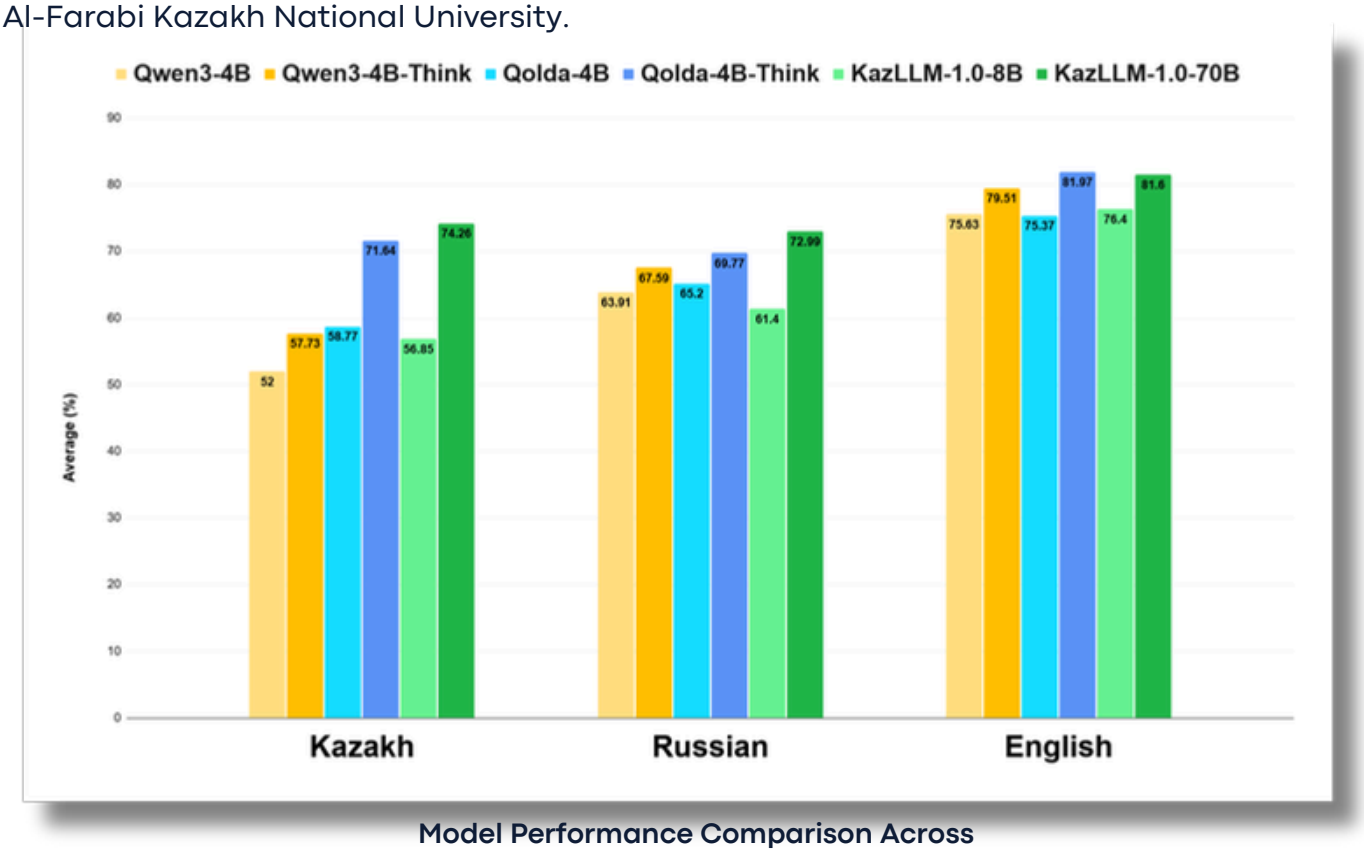
ISSAI PROJECTS

ISSAI Qolda

ISSAI Qolda is an open-source, compact vision-language model developed to broaden access to advanced multimodal AI capabilities and was introduced in November 2025. Within the current generative AI landscape, many state-of-the-art systems, including DeepSeek, KazLLM, and Oylan, deliver strong capabilities but are typically deployed on supercomputing-class infrastructure, which can limit access for most users. Qolda addresses this gap by offering a compact, open-source vision-language model with 4 billion parameters, bringing powerful multimodal reasoning to more modest hardware and enabling use on affordable devices such as laptops.

In parallel with performance and accessibility, ISSAI Qolda was developed with a clear focus on safety and ethical use. The model is designed to promote responsible interaction, avoid generating offensive or inappropriate content, and decline requests that could compromise security, reflecting ISSAI's broader mission to advance AI responsibly while safeguarding users and communities. On benchmark evaluations, Qolda, operating in reasoning mode with 4B parameters, demonstrates competitive performance matching the KazLLM-70B on Kazakh and Russian. Qolda communicates fluently in Kazakh, Russian, and English, and handles both text and image inputs with remarkable efficiency.

ISSAI continues its commitment to open, accessible AI by making Qolda available to the global community. This project was developed within the Program-Targeted Funding project titled "Creating a Large Language Model (LLM) to Support the Kazakh Language and Technological Progress" (IRN of the program: BR24993001) in consortium with Al-Farabi Kazakh National University.

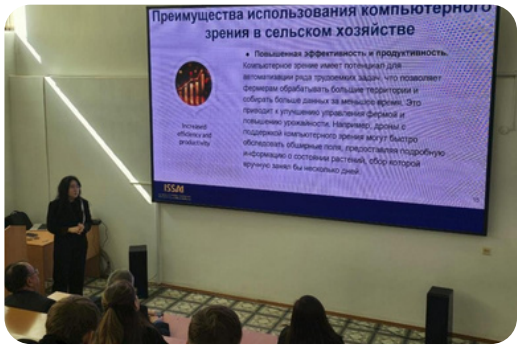


Model Performance Comparison Across Kazakh, Russian, and English

Hugging Face model page:
huggingface.co/issai/Qolda
GitHub deployment repo:
github.com/IS2AI/Qolda-deployment

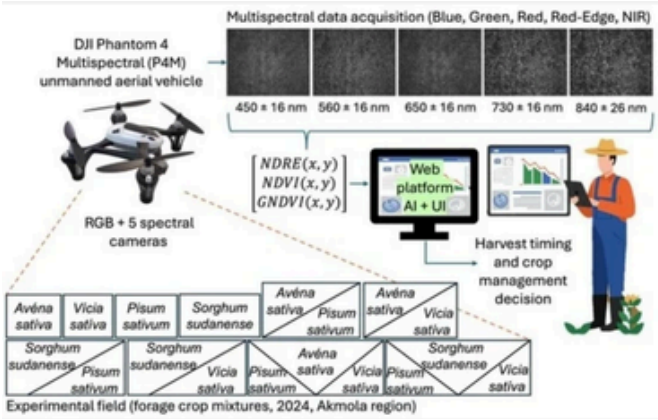
ISSAI PROJECTS

AI-Powered Aerial Multispectral Imaging for Forage Crop Maturity Assessment: A Case Study in Northern Kazakhstan

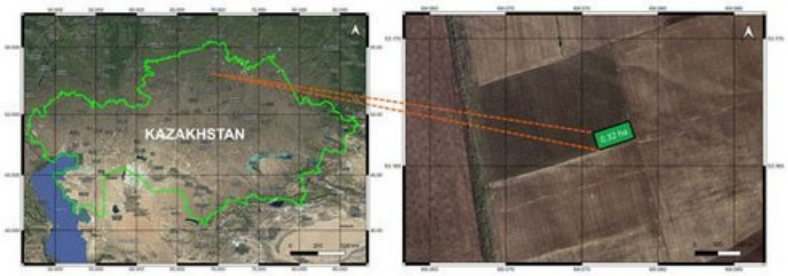


In 2025 ISSAI initiated a strategic collaboration with Shokan Ualikhanov University to explore the application of AI and machine learning in agriculture.
As part of this joint effort, the ISSAI team conducted an outreach visit to Kokshetau, delivering a seminar on computer vision applications in agriculture, including crop monitoring, and geospatial analysis.

A key outcome of the visit was the agreement to launch a joint research project focused on AI-based crop growth forecasting. Leveraging UAV-collected agricultural datasets provided by Shokan Ualikhanov University, a combined research team has been formed to develop a pilot model, with plans for a co-authored scientific publication. This project stands as a direct result of close collaboration with Shokan Ualikhanov University, highlighting the value of institutional partnership in advancing AI-driven solutions for Kazakhstan's agricultural sector.



Graphical Abstract



Location of the 32-hectare experimental field at Zhaksylik AGRO LLP, near Prirechnoye village, Zerendinsky District, Akmola Region, Kazakhstan (53.1662° N, 69.0785° E).

As a result of this collaboration the paper "AI in Agriculture – The Power of Computer Vision" was published in Q1 Agronomy journal – Agronomy 2025 (https://doi.org/10.3390/agronomy15122807).

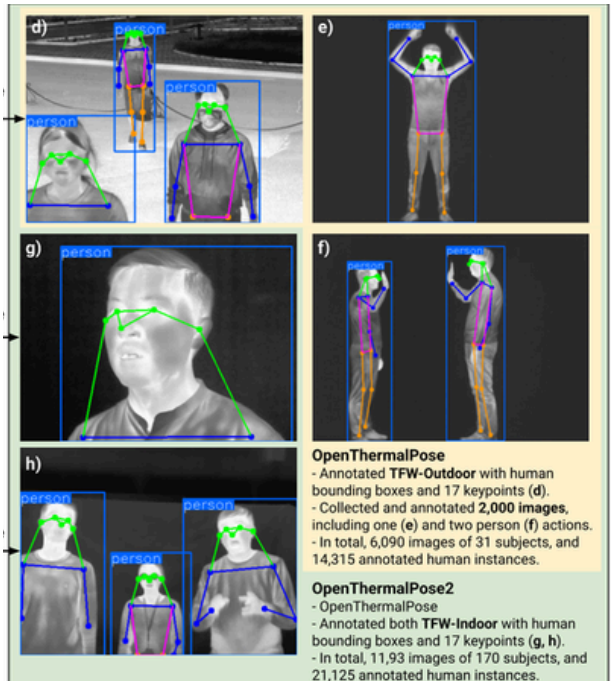
The project focuses on using AI-powered analysis of aerial multispectral images from UAVs to accurately assess the maturity level of forage crops in Northern Kazakhstan. It demonstrates that deep learning models can enable precise, real-time crop monitoring and support more efficient agricultural decision-making and yield management. Co-authors of the publication from the ISSAI include Huseyin Atakan Varol, Tomiris Rakhimzhanova, and Abylaikhan Myrzakhanov.

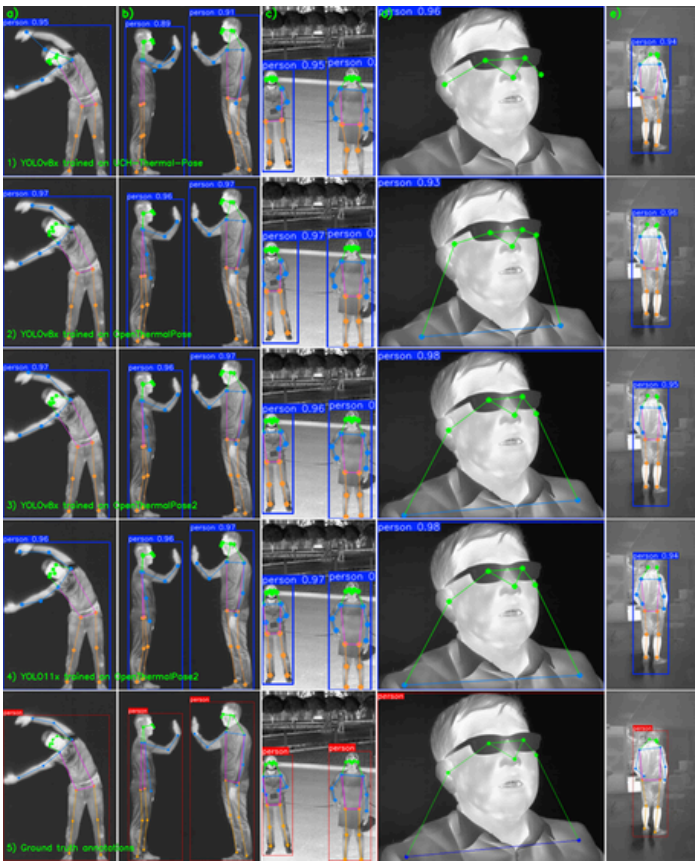
ISSAI PROJECTS

ISSAI achieves publication acceptance in the IEEE (T-BIOM) for OpenThermalPose2 - research on expanding open-source annotated thermal human pose data with more data, subjects, and poses.

ISSAI's study "OpenThermalPose2: Extending the Open-Source Annotated Thermal Human Pose Dataset With More Data, Subjects, and Poses" has been accepted for publication in the Q1 journal IEEE Transactions on Biometrics, Behavior, and Identity Science.

Human pose estimation is widely used in robotics, healthcare, and augmented reality; however, existing visible-light approaches face significant limitations in low-light environments and raise privacy concerns. To address these challenges, the OpenThermalPose2 dataset was developed, expanding thermal human pose data to 11,391 images and 21,125 annotated instances across 170 subjects.





The dataset was validated using state-of-the-art models, including YOLOv8-pose and YOLO11-pose, demonstrating improved performance compared to previous versions. The models were further optimized for real-time deployment on edge devices such as NVIDIA Jetson AGX Orin 64GB.

To support further research and practical adoption, the dataset, code, and pre-trained models have been released publicly.

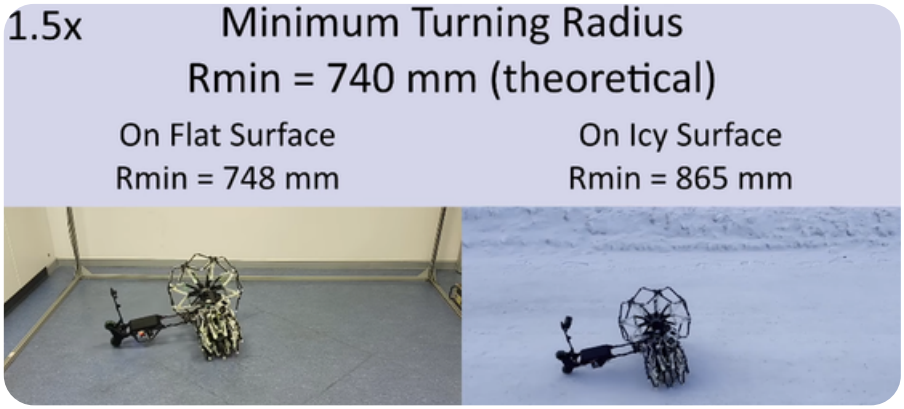
Read the paper.

ISSAI PROJECTS

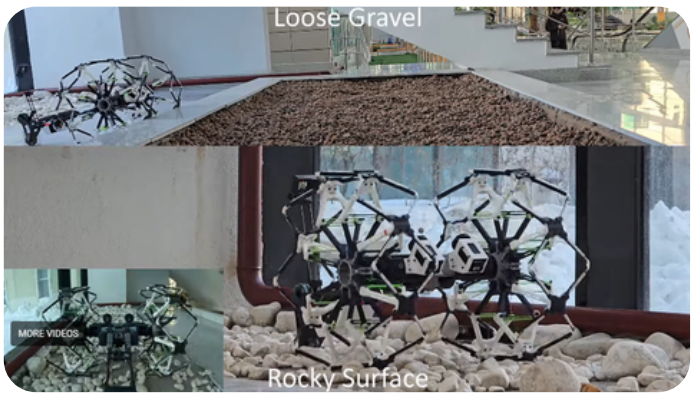
Terrain-Adaptive Mobile Robot at IROS 2025

Focused on advancing robotic mobility, ISSAI's latest research explored new approaches to enhancing the intelligence, adaptability, and real-world performance of next-generation robotic systems. Led by Gourav Moger, a PhD student and researcher at ISSAI, the project reflects the Institute's growing contribution to high-impact robotics research and innovation. It also demonstrates ISSAI's commitment to developing practical AI-powered solutions for complex mobility challenges in dynamic environments.

The paper, titled "Improbability Roller-2: A Hybrid Mobile Robot with Variable-Diameter Transformable Wheels," was developed under the supervision of Dr. Huseyin Atakan Varol and presented at the prestigious IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025), held in Hangzhou, in October 2025. The research introduces the Improbability Roller-2, an upgraded version of a terrain-adaptive mobile robot designed to overcome the challenges of locomotion in complex and unstructured environments such as snow, gravel, uneven ground, and confined indoor spaces.



The Improbability Roller-2 features a variable-diameter wheel mechanism utilizing a folding-linkage structure that allows the robot to dynamically adjust its wheel size in real time. Read the paper.



ISSAI
SUMMER RESEARCH PROGRAM

SUMMER RESEARCH PROGRAM

ISSAI views human capital development as a strategic imperative and a core part of its mission: by empowering the next generation of researchers and engineers, the Institute helps build Kazakhstan's long-term innovation capacity and strengthens the national AI ecosystem. Through sustained investment in talent, mentorship, and hands-on research education, ISSAI is committed to turning promising potential into real-world expertise and lasting impact.

The ISSAI Summer Research Program (SRP) is designed to cultivate the next generation of AI researchers and engineers by immersing participants in a structured, high-intensity research experience. Through hands-on work on real R&D challenges, close mentorship from ISSAI experts, and access to advanced computing infrastructure, the program strengthens participants' ability to think critically, design experiments, and communicate results while contributing to practical prototypes and research outputs aligned with the development of Kazakhstan's AI ecosystem.

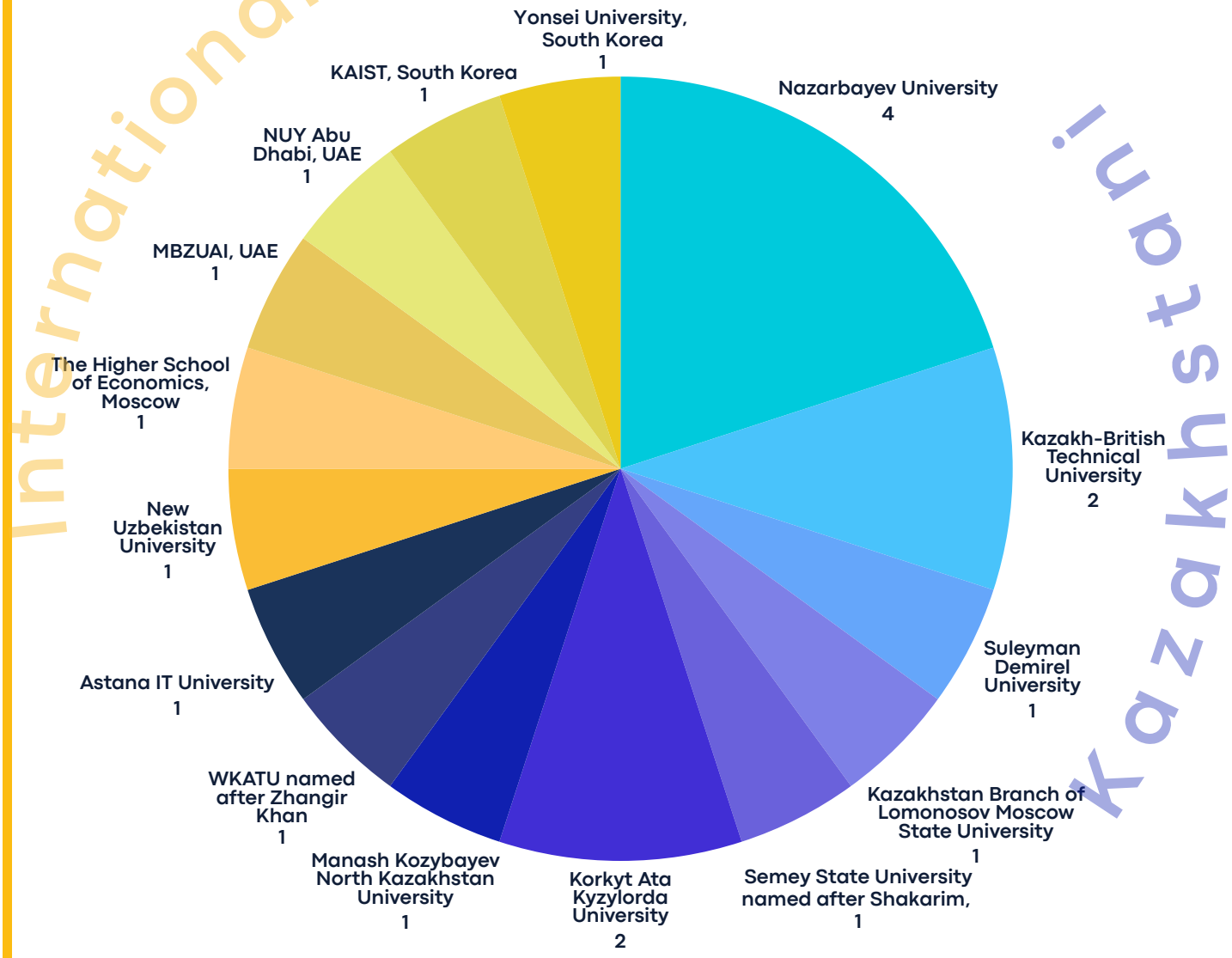
Since 2021, ISSAI has proudly organized SRP, bringing together talented high-school and university students from Kazakhstan and around the world. The program provides participants with hands-on experience and advanced training in Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, data algorithms, and related fields. Working closely with ISSAI's data scientists and researchers, students gain a unique opportunity to deepen their understanding of cutting-edge technologies and research methodologies.

SRP 2025 Application Distribution :
University vs. School Students

SUMMER RESEARCH PROGRAM

SRP for University Students

The 2025 cohort represented a diverse academic community. The program attracted a high volume of applications from both universities across Kazakhstan and international institutions, underscoring its expanding reach and growing recognition.



University Affiliation of Participants

The eight-week undergraduate research track concluded on July 31, 2025, with a final project showcase where student teams presented the outcomes of their summer research. Participants summarized their progress, shared key insights, and demonstrated practical applications of their work across AI, Robotics, and Software development.

In 2025, ISSAI introduced a paid participation option for kazakhstani and international university students in response to growing demand and the limited number of grant-funded places. The new format also supported the program's continued growth and sustainability.

SUMMER RESEARCH PROGRAM

SRP for High-school Students

High-school participants joined from leading institutions nationwide, including Bilim-Innovation Lyceum, Nazarbayev Intellectual Schools, Republican Physics and Mathematics School, Nurorda School-Lyceum, Astana Garden School, and Haileybury Astana. The six-week high school track ran from June 2 to July 10, 2025, offering an immersive experience in artificial intelligence, programming, robotics, and research. The program was structured into two main components: Theory and Practice.

During the first week, ISSAI researchers delivered intensive lectures on language models, computer vision, generative AI, and model optimization. In the following four weeks, participants selected specialized tracks and worked on research projects under expert supervision in areas such as Robotics, DevOps, MLOps, Avatars, Large Language Models (LLMs), and Speech-to-Text systems.

SRP High School Participants by City Across Kazakhstan

In 2025, ISSAI introduced a paid participation option for high school students in response to growing demand and the limited number of grant-funded places. The new format also supported the program's continued growth and sustainability.

SUMMER RESEARCH PROGRAM

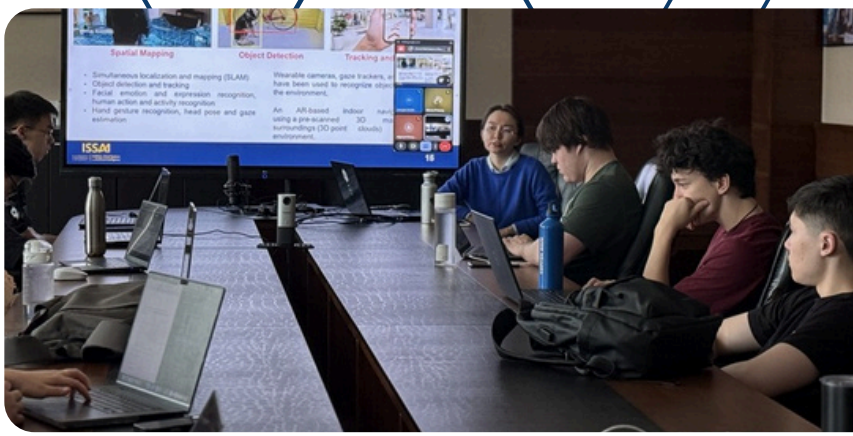
SRP 2025 Mentors

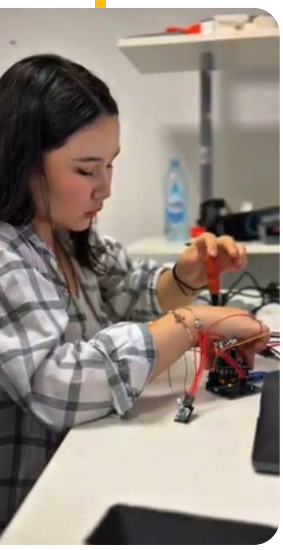
The SRP learning experience was shaped first and foremost by its mentors: a team of highly accomplished data scientists and core contributors to Kazakhstan's homegrown generative AI efforts. Many of them are authors of some of the country's earliest locally developed generative models, and SRP participants were truly fortunate to work under their guidance. Throughout the program, mentors dedicated several hours each day to hands-on supervision: sharing practical experience, providing detailed feedback, and helping students connect foundational theory with real-world implementation.
To further broaden participants' exposure and accelerate skill growth, the mentor team also delivered weekly masterclasses, one per specialization, offering an additional pathway to deepen technical knowledge and engage more widely with modern AI. The masterclass topics included:

- "Computer Vision Basics: What is Computer Vision, Image Processing, Main Computer Vision Tasks" by Tomiris Rakhimzhanova
- "Language Models and Vision-Language Models: How to Evaluate Them?" by Akylbek Maxutov
- "Real-Time Object Detection" by Aibota Sanatbyek
- "Augmented Reality, Artificial Intelligence and Avatars in Human-Computer Interaction for Education" by Zhanat Makhataeva
- "Basics of Working with Hugging Face: Tools and Applications" by Rassul Yermagambet
- "Large-Scale Data Collection and Curation" by Anuar Aryngazin
- "Rapid Generative AI Deployment Using Gradio" by Vladimir Albrekht
- "Image Generation with Diffusion Models: ControlNet, and Parameter-Efficient Fine-Tuning Methods" by Nartay Aikyn


ISSAI
NAZARBAYEV UNIVERSITY
Institute of Smart Systems and Artificial Intelligence


NAZARBAYEV UNIVERSITY



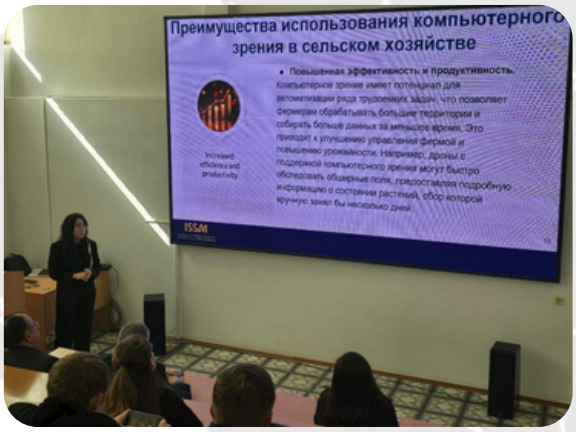


REGIONAL OUTREACH

REGIONAL OUTREACH

On January 30, Founding Director of ISSAI, Prof. Huseyin Atakan Varol, and Data Scientist Rakhat Meiramov attended the seminar “Artificial Intelligence: New Horizons for Digital Transformation in Universities” organized by the Ministry of Science and Higher Education of the Republic of Kazakhstan at Satbayev University **in Almaty.** The event brought together leadership from 73 universities across the country.

On February 20, ISSAI General Manager Kurmanov Gibrat spoke to the students of Suleyman Demirel Lyceum in **Almaty**. During the meeting, he spoke about ISSAI’s ongoing projects and also introduced the annual Students Research Program (SRP) for students, which has been running since 2021.



Executive Director Yerbol Absalyamov and Data Scientist Tomiris Rakhimzhanova visited **Kokshetau** on April 24 to deliver a seminar for the Agriculture Department of Ualikhanov University. During the seminar, Tomiris Rakhimzhanova presented a lecture titled “AI in Agriculture – The Power of Computer Vision,” introducing the audience to fundamental computer vision tasks such as detection, classification, tracking, and segmentation.

From April 14 to 28, the Institute of Smart Systems and Artificial Intelligence (ISSAI) at Nazarbayev University welcomed two master’s students — Nazerke Karim and Madiyar Kozhamzharov, both from **Korkyt Ata Kyzylorda University** — for an intensive internship at the Advanced Robotics and Mechatronics Systems Laboratory (ARMS).

REGIONAL OUTREACH

On May 23, Executive Director Yerbol Absalyamov participated as a speaker at the Republican strategic session "Artificial Intelligence in the Training of Specialists in Language and Archival Profiles" which was held at the JSC "Ablai Khan Kazakh University of International Relations and World Languages" in **Almaty**.

On May 26, the ISSAI team, led by Executive Director Yerbol Absalyamov, visited Alatau Hub - the leading IT innovation center in Almaty region, **Konayev city.** The visit marked another step in ISSAI's mission to democratize access to artificial intelligence (AI) research across the country.

On May 29, 2025, Amina Baikenova, IT Product Manager at ISSAI, took part as a speaker at the VI Annual Business Council of the School of Liberal Arts held at Maqsut Narikbayev University, **Astana**. In her presentation, Amina introduced ISSAI's flagship AI-powered products, including MangiSoz and Oylan2.

ISSAI's data scientists, Tomiris Rakhimzhanova and Rakhat Meiramov, who represented ISSAI and Kazakhstan on the global stage as part of the U.S. Department of State's prestigious International Visitor Leadership Program (IVLP). Over several weeks, Tomiris and Rakhat engaged with world-leading AI institutions and innovation hubs across the **United States**, establishing strong academic and professional connections that promise fruitful collaboration for years to come.

REGIONAL OUTREACH

On August 30, ISSAI took part in the brainstorming session "Artificial Intelligence: Forming a Portfolio of Projects in the System of the Office of the President of Kazakhstan," held at the **Independence Palace in Astana**. The event gathered representatives from government bodies, academia, and the private sector to discuss the integration of AI solutions into the activities of public administration institutions, with a particular focus on healthcare, HR, media, and tourism.

Astana, 9 September ISSAI participated in the national expert platform "KISI GPS: Gylym. Pikir. Sayasat," organized by the **Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan (KISI)**. The event focused on discussing the strategic directions set out in President Kassym-Jomart Tokayev's Address to the Nation, delivered on 8 September 2025.

On October 28, ISSAI took part in the Republican Forum "**Teacher Competence and Ethics in the Age of Artificial Intelligence",** held at **School-Lyceum No. 84 in Astana.** The event gathered educators from across Kazakhstan to discuss the evolving role of teachers in the digital era and explore the ethical use of AI in education.

REGIONAL OUTREACH

On November 22, ISSAI took an active part in NU Day in **Almaty -** one of the annual outreach designed for high school students, parents. Executive Director Yerbol Absalyamov delivered a presentation about ISSAI and its products. Throughout the event, Yerbol Absalyamov and ISSAI Senior PR Manager Aliya Tusupova hosted the ISSAI booth, where visitors had the chance to explore the institute's latest technologies and ask any questions.

From 3 to 5 December, Amina Baikenova, Acting Deputy Director of Product and External Affairs at ISSAI, participated in the Aqtobe Investment Forum 2025, hosted by the Akimat of **Aqtobe**. The forum brought together government representatives, investors, and business leaders where Amina Baikenova engaged in discussions with key stakeholders.

On December 25, Galammadin Askar, a researcher at ISSAI, participated in the annual SAMGAU Alumni Forum hosted at NIS **Turkistan**. Galammadin provided an overview of the products he is involved with at ISSAI and highlighted the opportunity for students to participate in the Summer Research Program.

ISSAI EVENTS

EVENTS

ISSAI Welcomes Experts of the Council for the Development of Artificial Intelligence under the President of the Republic of Kazakhstan

World-leading AI Expert Dr. Kai-Fu Lee visited ISSAI

On January 11, SSAI had the honor of welcoming Dr. Kai-Fu Lee, Chairman and CEO of Sinovation Ventures, one of China's leading venture capital companies and a global expert in AI. Dr. Kai-Fu Lee was highly impressed by the quality of ISSAI's projects, acknowledging the complexity of data collection and development involved. He praised the team for their accomplishments and engaged in a productive discussion about future collaboration opportunities.

Prof. Olaf Groth from UC Berkeley Meets with ISSAI to Discuss AI Strategy and Global Trends

On May 28, ISSAI at Nazarbayev University welcomed Professor Olaf Groth, renowned futurist, geoeconomic strategist, and faculty member at the UC Berkeley Haas School of Business. The meeting was organized by the Sustainable Innovation and Technology Foundation (SITF), with key contributions from Nailya Shodorova, Chief Program Manager at SITF, and Yerbol Kapishev, CEO of Jas Ventures Limited, a strategic partner of the foundation.

Stanford Professor and Kazakhstan AI Council Member Paul Kim Visits ISSAI to Discuss Cooperation on AI-Sana

On **October 6,** the Institute of Smart Systems and Artificial Intelligence at Nazarbayev University hosted Dr. Paul Kim, Professor at Stanford University and Member of the Kazakhstan AI Council, and Elena Sedykh, venture investor and founder of Dogovor24.
The visit aimed to discuss potential collaboration on the AI-Sana national initiative and explore opportunities to integrate ISSAI's technologies into large-scale digital and AI projects in Kazakhstan.

EVENTS

ISSAI showcased the Oylan Language Vision Model and MangiSoz at the Digital Almaty 2025

From January 31 to February 1, 2025, ISSAI team participated in the Digital Almaty 2025 Forum. The team presented significant projects of the Institute.
ISSAI's dense booth attracted a diverse audience of experts, international guests, developers, students, and AI enthusiasts.

The exhibition focused on the demonstration of the MangiSoz, a multifunctional application for speech recognition, voice synthesis, and text and speech translation capabilities in Kazakh, Russian, English, and Turkish, as well as Oylan, a powerful generative AI model that can process images and substantially surpass text processing capabilities of ISSAI's former language model KAZ-LLM. The event underscored the genuine interest in ISSAI's projects, with many attendees present specifically to learn about the Institute's innovations and engage with the Team.

EVENTS

ISSAI Update: ISSAI Unveils Kazakhstan's Next Generation of AI Technologies

July 17, 2025 ISSAI has unveiled a new suite of artificial intelligence technologies designed, developed, and deployed entirely by Kazakhstani professionals. The systems presented during the press briefing mark a significant leap in Kazakhstan's journey toward self-reliance, cultural alignment, and infrastructure independence for Artificial Intelligence. Following the presentation of the KazLLM large language model in December 2024, ISSAI now introduces five breakthrough products that place Kazakhstan at the forefront of culturally grounded and linguistically inclusive AI.

Technologies Unveiled:

- Oylan 2.5 - Multilingual Multimodal AI Assistant with Additional Latin Script Support; ISSAI's powerful AI assistant capable of operating in Kazakh, Russian and English languages; users to interact with this model using the Latin script for Kazakh in addition to the Cyrillic script.
- MangiSoz 2.0 - Speech Recognition, Synthesis and Translation Engine; A robust system for real-world speech processing.
- TilSync - Real-Time Subtitling and Translation Tool; TilSync enables seamless communication across languages and platforms.
- Beynele - Culturally-Tailored Multilingual Image Generator; A generative AI model trained to create culturally relevant visuals from Kazakh, English, and Russian prompts.
- Mangitas 02 - Inference Server for Localized and Secure AI Deployment. Custom-built AI hardware for secure and localized model inference:

EVENTS

ISSAI Founding Director, Dr. Atakan Varol, Presents His New Book, "The Next Contract," on Humanity's Future with Ascendant AI

Dr. Atakan Varol, the founding director of ISSAI, has announced the publication of his new book, "The Next Contract: Navigating Humanity's Future with Ascendant AI." The book tackles one of the most pressing issues of our time: how humanity will coexist with an artificial intelligence that could surpass human capabilities.

ISSAI Demonstrates Generative AI Projects to Estonian President During Official Visit to Nazarbayev University

On November 17, the Institute of Smart Systems and Artificial Intelligence (ISSAI) at Nazarbayev University proudly showcased its latest advancements in generative artificial intelligence to His Excellency Dr. Alar Karis, President of the Republic of Estonia. The visit marked an important milestone in the strengthening of academic and technological cooperation between Kazakhstan and Estonia.

Latest AI Innovations of ISSAI Showcased at the NU Embassy Day 2025

On November 17, the Institute of Smart Systems and Artificial Intelligence (ISSAI) at Nazarbayev University proudly showcased its latest advancements in generative artificial intelligence to His Excellency Dr. Alar Karis, President of the Republic of Estonia. The visit marked an important milestone in the strengthening of academic and technological cooperation between Kazakhstan and Estonia.

EVENTS

ISSAI hosts global AI leaders: Peter Norvig, John Hopcroft generously shared their wisdom with 400 students at Nazarbayev University

On October 1, 2025, ISSAI hosted AI Horizons: A Conversation with Global Leaders, a landmark event that brought together internationally renowned pioneers in artificial intelligence. The discussion featured Prof. Peter Norvig, Researcher at Stanford University and Director of Research at Google; Prof. John Hopcroft, Turing Award laureate and distinguished scientist in computational theory; and Prof. Merouane Debbah, Professor at Khalifa University of Science and Technology. The session was moderated by Prof. Huseyin Atakan Varol, Founding Director of ISSAI, and attended by students, faculty, and researchers from the NU AI community.

The dialogue addressed the future of AI research, education, and global competitiveness. Prof. Hopcroft reflected on the enduring importance of classical computer science in the age of deep learning and emphasized the value of aligning careers with personal passion. Prof. Norvig spoke on the challenges of interpretability in increasingly complex AI systems, underscoring the importance of trustability.

The event concluded with an open exchange between the speakers and NU students, inspiring the next generation of AI researchers and practitioners to pursue their work with curiosity, creativity, and purpose.

EVENTS

ISSAI at Digital Bridge 2025: Shaping Kazakhstan's AI Future

On October 2, 2025, ISSAI at Nazarbayev University hosted a high-level panel at Digital Bridge 2025 in Astana, bringing together global and regional leaders to discuss how Kazakhstan can localize artificial intelligence while ensuring global relevance.

The panel, titled "Bridging Academia, Innovation, and Society: Localizing AI for Global Relevance," took place in Quantum Hall and was moderated by Amina Baikenova, Acting Deputy Director of Product and External Affairs at ISSAI.

Opening the discussion, Sarim Aziz, Director of Public Policy at Meta Platforms Inc., emphasized the importance of open research and collaborative ecosystems: "Open-source models like Llama are already being adapted for the Kazakh language. By joining global initiatives such as the AI Alliance, Kazakhstan can ensure its voice is heard in shaping the future of AI." He noted that governments should prioritize robust safety benchmarks while avoiding overly rigid regulations that might hinder innovation.

From the startup perspective, Elmira Obry, Founder of Foody AI, highlighted the transformative impact of AI. Prof. Huseyin Atakan Varol, Founding Director of ISSAI, underscored the strategic imperative for Kazakhstan to build sovereign AI capabilities: "While global powers dominate AI with massive investments, countries like Kazakhstan must carve out their own niche. Localized, domain-specific models rooted in our languages and culture are essential for ensuring sovereignty in the digital era." Adding a broader regional perspective, Leisan Akhmadullina, Director of Development and Corporate Innovations at Innopolis, stressed the need for integration.

At Digital Bridge 2025, ISSAI ran an interactive booth where visitors explored live demos of our AI products: Oylan, Mangisoz, Beynele, and TilSync, and discovered the newly launched ISSAI AI Playground. Over three days, our team engaged hundreds of guests, hosted a short AI quiz with branded prizes, and discussed SRP opportunities with interested students.

EVENTS

ISSAI Hosts AI & Circular Construction Conference at Nazarbayev University

On November 28, 2025 ISSAI held the AI and the Circular Economy: Shaping the Future of Construction Policy and Practice conference, dedicated to exploring how artificial intelligence and circularity can transform the built environment. Organized in collaboration with the ACI Student Chapter, the event welcomed around 120 participants, including experts, policymakers, ISSAI researchers, and students from NU's Civil Engineering program.

The conference invited attendees to discover how digital innovation, data analytics, and circular thinking are shaping the future of sustainable construction, where AI provides measurable indicators of urban circularity and supports greener, smarter, and more efficient cities. This year's theme focused on AI-driven circularity in the built environment, including urban resilience, circular city indexing (CCI), intelligent construction management, and resource-efficient design.

Prof. Luís Bragança presented digital tools and AI-enabled frameworks for circular building assessment, while Bakhtiyar Bekenov outlined Astana's sustainable urban planning initiatives, and Alexandr Belyy with Aiman Shopaeva introduced the national OMIR green building standard. Adiya Karsybek discussed climate risks and infrastructure vulnerabilities in Petropavlovsk, and Prof. Charalampos Baniotopoulos highlighted AI applications in predictive maintenance for wind energy, alongside research by Hamad Hassan Awan and Sakiru Olagunju on deep learning and material flow analysis. In closing, Prof. Huseyin Atakan Varol emphasized the strategic role of AI, circularity, and data-driven planning in advancing Kazakhstan's sustainable development agenda.

EVENTS

ISSAI Momentum Showcases Kazakhstan's Homegrown AI Innovations

On December 10, 2025 ISSAI hosted its ISSAI Momentum event at the Main Hall of Nazarbayev University, attracting over 150 distinguished guests from government, academia, IT companies, non-governmental organizations, international organizations, and diplomatic missions. The event showcased the latest advancements in artificial intelligence developed entirely by Kazakhstani experts, demonstrating Kazakhstan's commitment to technical independence, linguistic inclusivity, and cultural alignment.
ISSAI unveiled a suite of next-generation AI products designed for real-world applications:

- Oylan 3 – A multimodal AI tool processing text, speech, and images in Kazakh (including Latin script), Russian, and English, featuring web search, advanced reasoning and Retrieval-Augmented Generation (RAG) for accurate, context-aware responses.
- MangiSoz 3 – A comprehensive speech recognition, synthesis, Optical Character Recognition (OCR), and translation engine supporting 11 languages, including Kazakh, Russian, English, Turkish, Chinese, Arabic, French, Spanish, Kyrgyz, Uzbek, and Azerbaijani. It also features expressive voice generation.
- TilSync 2 – A next-generation live translation platform for events and broadcasts, offering real-time translation via QR code, translation history, speaker introductions, macOS support, and dual subtitle streams in Kazakh, Russian and English.
- Beynele 2 – A culturally grounded multilingual image generation system trained on extensive Kazakh visual datasets. The latest version supports multi-image conditioning, allowing photorealistic compositions that reflect Kazakh aesthetics and identity.
- Mangitas 02 – A secure, cloud-independent AI inference server capable of hosting all ISSAI models in a closed network, ensuring confidentiality and compliance with enterprise security requirements.

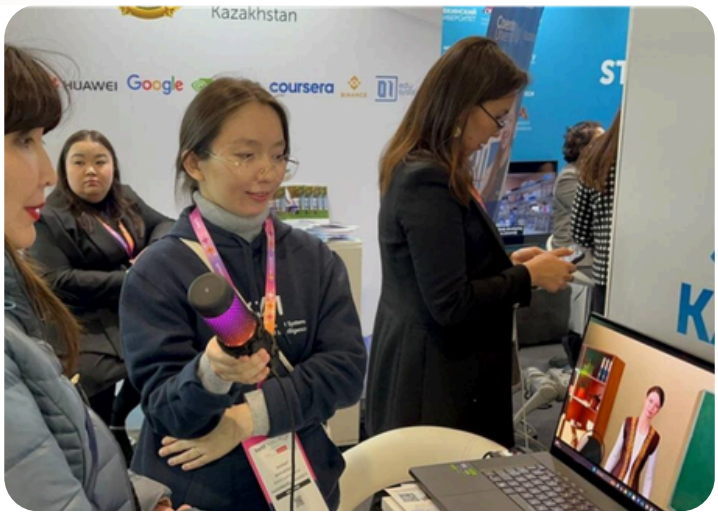
The program included live demonstrations, Q&A sessions, and showcases of real-world AI applications.

Data scientist Rakhat Meiramov led live demonstrations of Oylan, MangiSoz, and Beynele, showcasing their multimodal capabilities, expressive speech generation, real-time translation, and document-based RAG search. He invited attendees to explore ISSAI's AI Playground, emphasizing the importance of collaboration and user feedback in improving AI performance. The ISSAI Momentum event confirmed Kazakhstan's emergence as a hub for homegrown AI innovation. With its complete generative AI stack, secure inference solutions, and culturally aligned AI technologies, ISSAI is shaping a future where artificial intelligence serves national priorities while remaining accessible, inclusive, and secure.

CONFERENCES

CONFERENCES

BETT 2025 Hyve Event, ExCeL London



From January 21 to 24 Dr.Zhanat Makhataeva, a Senior Data scientist at ISSAI, attended the BETT 2025 Hyve Event, held in ExCeL London, United Kingdom. Dr. Zhanat was demonstrating the Aibike Kazakh-speaking digital avatar, engaging visitors and international delegates in discussions on AI in education. Read more.

ISSAI Participated in the Workshop on AI and Ethics at L.N. Gumilyov Eurasian National University

February 26, – A workshop on "Artificial Intelligence and Ethics: A Sustainable Future" took place at L.N. Gumilyov Eurasian National University. The event was organized by the Central Asian Office of the Muslim Council of Elders with the support of the Senate of the Parliament of the Republic of Kazakhstan. Read more.

AI and Scientific Communication in the Kazakh Language, Turkistan

On April 2nd, Executive Director of ISSAI Absalyamov Yerbol was a panel speaker in the session titled "AI and Scientific Communication in the Kazakh Language" moderated and organized by Til-Qazyna National Scientific and Practical Center named after Shaisultan Shayakhmetov in Turkistan. Yerbol Absalyamov highlighted our latest advancements, including Mangisoz, KazLLM, Oylan, and upcoming multimodal models. Read more.

CONFERENCES

ISSAI presented four papers at ICCAR in Kyoto, Japan

The ISSAI team, consisting of Lead Data Scientist Askat Kuzdeuov, Head of the ARMS Laboratory Azamat Yeshmukhametov, and Postdoctoral Researcher Tolegen Akhmetov participated in the 11th International Conference on Control, Automation and Robotics (ICCAR). The event took place from April 18 to 20 at the Kyoto Research Park in Kyoto, Japan. Read more.

The Abai Phenomenon in the Educational and Scientific Space of the 21st Century

On April 11, Executive Director Yerbol Absalyamov and Data Scientist Mr. Mamyrbek Parakhatuly took part in the national student scientific conference titled "The Abai Phenomenon in the Educational and Scientific Space of the 21st Century." The event was organized in celebration of the 180th anniversary of the great Kazakh thinker and poet Abai Kunanbayuly and the 15th Anniversary of Nazarbayev University. Read more.

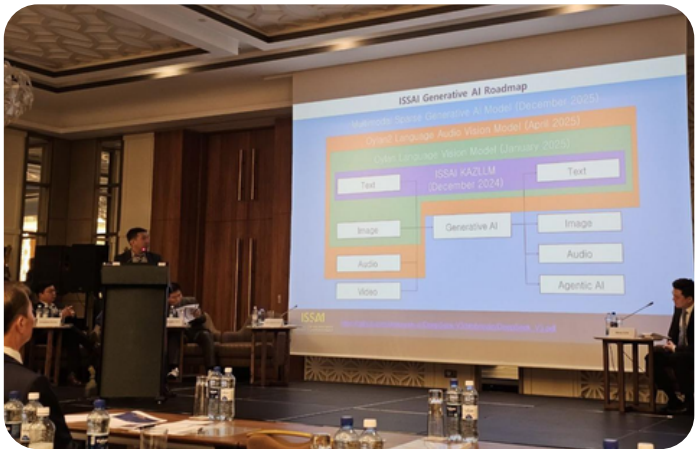
CONFERENCES

Asian Universities Alliance (AUA) Summit 2025, University of Tokyo

Founding Director of ISSAI, Prof. Huseyin Atakan Varol, participated in the Asian Universities Alliance (AUA) Summit 2025, held at the University of Tokyo from April 16-20, as part of the Nazarbayev University delegation, which also included NU President Prof. Waqar Ahmad and Prof. Prashant Jamwal. Read More.

Times Higher Education (THE) Asia Universities Summit 2025, Macau

Macau, April 23, ISSAI Founding Director Prof. Huseyin Atakan Varol participated in the Times Higher Education (THE) Asia Universities Summit 2025 as part of the Nazarbayev University delegation led by NU President Dr. Waqar Ahmad. NU delegation presented "KazLLM: How Universities Can Drive Translational Impact in Generative AI," highlighting Kazakhstan's pioneering work in generative AI and attracting strong interest from academic and industry leaders. Read more.



Exploring AI Policies and Collaborative Opportunities between Korea and Kazakhstan

On April 21, Yerbol Absalyamov participated as a featured speaker at the seminar "Exploring AI Policies and Collaborative Opportunities between Korea and Kazakhstan." The event was jointly organized by the Embassy of the Republic of Korea in the Republic of Kazakhstan and the Ministry of Digital Development, Innovation and Aerospace Industry of Kazakhstan. Read more.

CONFERENCES

GovHR Forum at the Academy of Public Administration

On June 20, Dr. Atakan Varol, participated in the GovHR Forum held at the Academy of Public Administration in Astana. The forum brought together national and international experts in HR management, digital governance, and AI under the theme "New Systems, Modern Services, Novel Solutions." Dr. Varol discussed how AI can improve decision-making, automate routine processes, and personalize services in government institutions. Read more.

AI-SANA meet-up "From Inertia to Anticipation"

On July 4, Yerbol Absalyamov, Executive Director of ISSAI, took part as a speaker at the AI-SANA meet-up "From Inertia to Anticipation", an open forum on Kazakhstan's role in the age of artificial intelligence. Held at Astana Hub. During the session "Technologies, Scenarios, and Infrastructure", Mr. Absalyamov gave a presentation on ISSAI and its key research projects. Read more.

Bilim Keleshegi: Adal Azamat – Kásibi Maman

August 14–15, ISSAI participated in the Republican August Conference "Bilim Keleshegi: Adal Azamat – Kásibi Maman" in Astana. On August 14, Amina Baikenova, Acting Deputy Director for Product Development at ISSAI, spoke at the panel "Education in the Era of Artificial Intelligence". On August 15, the ISSAI team showcased its AI-powered educational solutions at the conference exhibition. Read more.

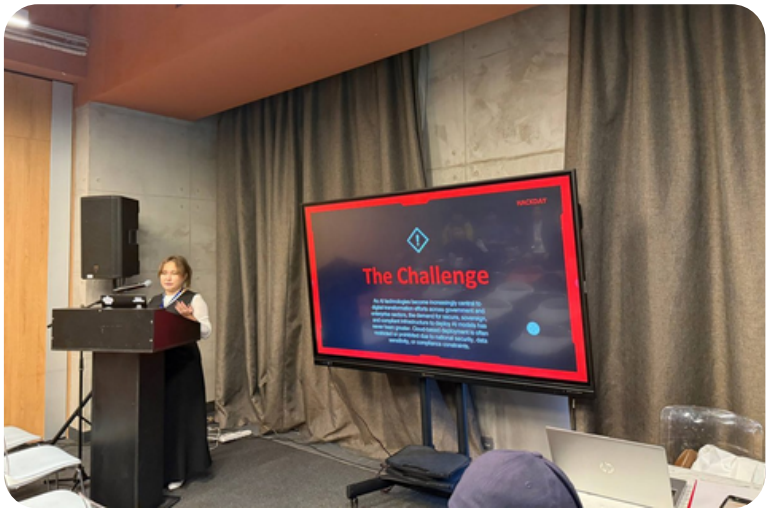
CONFERENCES

Regional Workshop for the CIS, “Cooperation with ITU: Opportunities for Member States, Sector Members and Academia. ITU Structure and Working Methods Explained”

Between 20–22 August, the International Telecommunication Union (ITU) held the Regional Workshop for the CIS, “Cooperation with ITU: Opportunities for Member States, Sector Members and Academia. ITU Structure and Working Methods Explained.” Executive Director Yerbol Absalyamov delivered a presentation on the Institute’s progress in developing generative AI models for the Kazakh language. Read more.

Nura District Akimat of Astana

On September 18, ISSAI participated in a meeting organized by the Nura District Akimat of Astana. ISSAI’s General Director, Dr. Huseyin Atakan Varol, delivered a speech highlighting the Institute’s role in advancing Kazakhstan’s AI ecosystem. Executive Director, Yerbol Absalyamov, showcased a range of AI products developed by the Institute and presented recommendations for applying AI in several critical sectors. Read more.



KazHackStan 2025

From 17 to 19 September ISSAI took part in KazHackStan 2025, Central Asia’s largest cybersecurity conference, held at Sadu Arena, Almaty. The event brought together more than 6,000 participants. Amina Baikenova, Acting Deputy Director of Product and External Affairs, participated as a speaker and actively engaged in the track sessions throughout all three days of the conference. Read more.

CONFERENCES

International Conference on Computer Science and Engineering (UBMK 2025) Istanbul

On 18 September, ISSAI Data Scientist Rakhat Meiramov presented a co-authored research paper at the International Conference on Computer Science and Engineering (UBMK 2025) in Istanbul, Turkey. The paper introduced new approaches to improving speech recognition for the Kazakh language, with a particular focus on enhancing the accurate transcription of names of people, places, and organizations. Read more.

Think Tank Forum 2025

On October 16, The Think Tank Forum 2025, convened on October 15–16 in Astana by the Kazakhstan Institute for Strategic Studies (KazISS) under the auspices of Astana International Forum (AIF). Dr. Huseyin Atakan Varol emphasized the growing importance of regional contributions to the global AI ecosystem and the need for ethical and inclusive innovation. Read more.

Harnessing Artificial Intelligence for Inclusive Education: A Scalable Model for the CAREC Region

On October 22, Zhanibekov University hosted the international conference "Harnessing Artificial Intelligence for Inclusive Education: A Scalable Model for the CAREC Region" in Shymkent. The event was supported by the CAREC Institute. Dr. Huseyin Atakan Varol delivered a keynote address highlighting Kazakhstan's leadership in developing responsible and sovereign generative AI technologies. Read more.

CONFERENCES

51st Annual Conference of the IEEE Industrial Electronics Society (IECON), Madrid

ISSAI's Lead Data Scientist Askat Kuzdeuov and Undergraduate Research Assistant Artur Muratov participated in the 51st Annual Conference of the IEEE Industrial Electronics Society (IECON). The event took place from October 14 to 17 at the Hotel Melia Castilla in Madrid, Spain. Askat Kuzdeuov presented his work, "Real-Time Multispectral Human Pose Estimation" (co-authored with Prof. Huseyin Atakan Varol), in the AI and Signal & Image Processing Methodologies session.
Read more.

1st International Conference of the Turkic World on the Ethics of Artificial Intelligence, Baku

On October 28–29, Dr. Huseyin Atakan Varol, Founding Director of ISSAI participated in the 1st International Conference of the Turkic World on the Ethics of Artificial Intelligence, jointly organized by Baku State University, the Turkic Academy, and the Turkish Academy of Sciences (TÜBA). Dr. Varol delivered a presentation titled "Language, Culture, and Ethics: Localizing Generative AI for Digital Independence and Technological Development." Read more.

International Scientific and Practical Conference "Artificial Intelligence and the Challenges of the Modern World,"

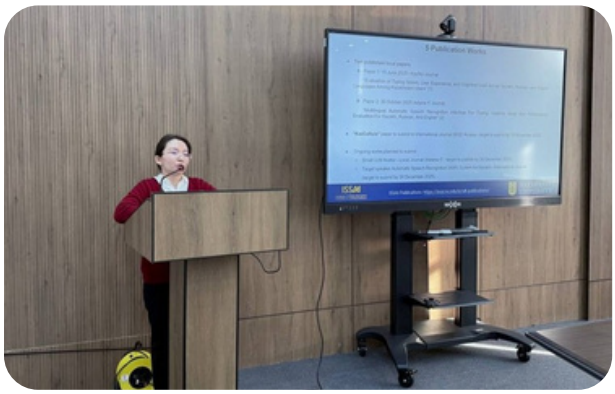
On December 5, ISSAI took part in the International Scientific and Practical Conference "Artificial Intelligence and the Challenges of the Modern World," dedicated to the memory of academician Zulkharnai Aldamzhar, founder of the Kostanay Social-Technical University. Executive Director Yerbol Absalyamov delivered a presentation on the Institute's recent achievements in generative AI. Read more.

CONFERENCES

LLM Workshop at Al-Farabi KazNU

On November 7, the ISSAI team traveled to Almaty to take part in the LLM Workshop hosted at Al-Farabi KazNU. The event brought together researchers, students, and AI enthusiasts to explore the future of the Kazakh language in AI and machine learning.

Within this collaborative setting, ISSAI introduced the first prototype of the Qolda Model - a compact language-vision model designed to make advanced language intelligence truly accessible. This project was realized with the support of Prof. Madina Mansurova, Head of the Department of AI and Big Data at Al-Farabi KazNU. Read more.



9th International Natural Language Processing and Information Retrieval Conference (NLPIR 2025), Japan

ISSAI researchers took part in the 9th International Natural Language Processing and Information Retrieval Conference (NLPIR 2025), held on December 12–14 at Kyushu University's Research and International Exchange Plaza in Fukuoka, Japan. During the conference, Anuar Aryngazin, Data Scientist at ISSAI, presented the paper "Multi-Head Vision Transformer for Multilingual Font and Language Identification", co-authored with Professor Huseyin Atakan Varol, Founding Director of ISSAI. The papers will be published by Springer Nature following the conference. Read more.

NAZARBAYEV UNIVERSITY

ISSAI FACULTY SPOTLIGHT

COLLABORATIONS

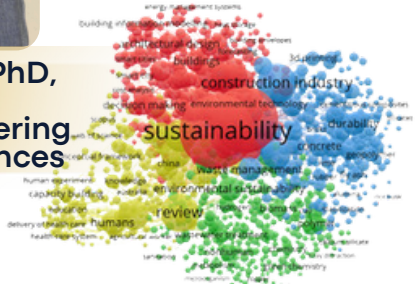
The ISSAI Faculty Spotlight highlights the Institute's close collaboration with faculty members across the Schools of Nazarbayev University and its commitment to developing joint projects that bring together academic knowledge and practical innovation.

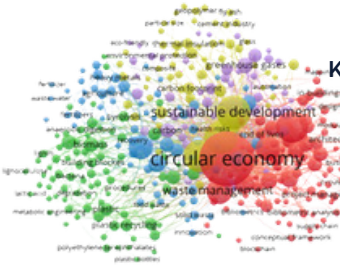
These partnerships represent an important point of intersection between the theoretical depth and research perspective of university scholars and ISSAI's hands-on expertise in building and deploying applied AI solutions. Through this collaboration, ideas emerging from academia are translated into impactful initiatives with real-world relevance. In doing so, ISSAI strengthens the connection between research excellence and implementation, fostering an environment where theory and practice meaningfully advance together.

Beyond buzzwords: NLP reveals common threads in sustainable and circular construction discourse

Ferhat Karaca, PhD, Professor, School of Engineering and Digital Sciences

Developed through collaboration involving Dr. Ferhat Karaca, Nazarbayev University Professor, this project applied natural language processing to bring greater conceptual clarity to the construction literature on sustainability and circular economy. By analyzing 480 academic articles with TextRank, TF-IDF, and semantic annotation, the study established a data-driven framework for identifying both the overlaps and the distinctions between these two widely used concepts.





Keywords bibliometric clouds of the "circular economy & construction" and "sustainability & construction", in related academic literature.

The findings showed that circular construction is generally framed in more practical and operational terms focused on resource efficiency, waste management, recycling, and recovery, whereas sustainable construction reflects a broader and more holistic perspective encompassing urban planning, community development, and long-term environmental impact. This collaborative work was subsequently published as the paper "Beyond buzzwords: NLP reveals common threads in sustainable and circular construction discourse" in PeerJ Computer Science (https://doi.org/10.7717/peerj-cs.3085). From the Nazarbayev University side, the paper was co-authored by Huseyin Atakan Varol and Ferhat Karaca.

COLLABORATIONS

Central Asia Food Innovation Laboratory (CAFI Lab)

Mei Yen Chan, PhD
Ph.D. in Global Health
Assistant Professor

CAFI lab, based at Nazarbayev University, is transforming how we understand what people eat in the Central Asia region, a region facing a growing burden of diet-related diseases while lacking modern, culturally relevant nutrition data. Traditional methods, such as handwritten food diaries, are slow and unreliable. CAFI Lab is addressing this challenge by using digital tools that can instantly recognize meals from photos, making the tracking of dietary habits faster, easier, and more accurate. This project was implemented in collaboration with Dr. Mei Yen Chan. A major achievement of the Lab is the creation of the first and only Central Asian Food Scenes Dataset (Scientific Reports, 2025) - a collection of real, everyday meals from the region, captured as they are eaten, often with several foods on one plate.

This dataset enables Artificial Intelligence (AI) systems to better recognize local dishes, rather than relying on generic foods commonly found in Western databases. CAFI Lab also developed a Food Atlas for Central Asia (Nutrients, 2025), which helps people accurately estimate portion sizes, benefiting clinicians, researchers, mobile health applications, and policymakers. The Lab has examined how emerging AI tools, such as large language models, could provide personalized nutrition advice and support healthcare professionals (Journal of Nutrition, 2025), while carefully examining their limitations, particularly for underrepresented languages such as Kazakh. Beyond digital tools, CAFI Lab is innovating in food quality and sustainability. This includes non-invasive methods to measure sugar content in foods (Foods, 2025), studies on 3D food printing using plant-based proteins (Frontiers in Nutrition, 2024) and various dough formulations (Foods, 2024). Their research highlights buckwheat—a traditional crop in the region—as a promising and sustainable alternative to meat. Building on this work, the Co-Principal Investigator, Dr. Didier Talamona's team presented the study “Rheology and Printability of Green Buckwheat Dough for 3D Bio-Food Printing” at the Singapore Scientific Conference 2025.

COLLABORATIONS

Central Asia Food Innovation Laboratory (CAFI Lab)

CAFI Lab is committed to translating research into real-world impact. A recent study involving healthcare professionals and medical students in Kazakhstan revealed significant gaps in nutrition training, helping to inform future education and policy development (BMJ Nutrition, Prevention & Health, 2025). In 2025, CAFI Lab published seven international research papers in top-tier scientific journals, won top prizes at major global conferences, and presented its findings at both international and regional conferences. The Principal Investigator, Dr. Mei Yen Chan, delivered presentations at the 11th International Summit on Food, Nutrition and Health in Scotland; the 9th International Conference on Medical and Health Informatics (ICMHI 2025) in Kyoto, where the presentation received the Best Presentation Award.

Publications and Research Outputs:
BMJ Nutrition, Prevention & Health, 2025, BMJ Nutrition, Prevention & Health, 2025 , Foods, 2025, Foods, 2024, Frontiers in Nutrition, 2024, Frontiers in Endocrinology, 2025 - IEEE Access, 2025, ACM Digital Library, 2025, Journal of Clinical Medicine, 2025, Journal of Nutrition, 2025, Nutrients, 2023, Nutrients, 2025, Scientific Reports, 2025.

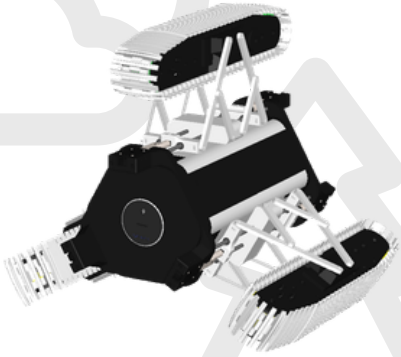
Conferences + speeches:
"Creation of a Digital Food Atlas for Kazakhstan", "ChatGPT for Dietary Guidance", "Aul's Current Situation and Future Perspectives in Kazakhstan", "Plant-Based Proteins for 3D Food Printing", NU Annual Research Conference, Astana, Kazakhstan, September 2024;
"A comparison of LLM in improving dietary habits", the 9th International Conference on Medical and Health Informatics (ICMHI 2025) (The topic of session 8: Data-Driven Approaches for Enhancing Healthcare Outcomes), Kyoto, Japan, May 2025;
"Digital Food Atlas: Improving Dietary Assessment via Optimized Food Volume Estimation", Nutrition 2025 by the American Society for Nutrition, Orlando Florida, USA, June 2025;
"Development of an AI-Powered Food Recommendation App Based on Dietary Preferences in Kazakhstan", NU Annual Research Conference, Astana, Kazakhstan, September 2025;
"Deep Object Recognition-Based Analysis of Diverse Culinary Landscapes", IEEE International Conference on Image Processing (ICIP), Anchorage Alaska, USA, September 2025;
"Racing Against Diabetes: Precision Nutrition & Its Applications", Transforming Diabetes Care: From Precision Medicine to Health Systems Innovation, Astana, Kazakhstan, October 2025;
"Preserving and Digitizing Silk Road Food Heritage", Traditional and Indigenous Food Systems in Asian Silk Road Countries, November 2025 (online);
"Transforming Central Asia Food Systems for Health and Planetary Outcomes", The 1st Nazarbayev University International Conference on Planetary Health and Environmentally Sustainable Healthcare, Astana, Kazakhstan, December 2025;
"Harnessing Large Language Models for Dietary Pattern Recognition: AI Driven Insights into Cardiometabolic Health", the 11th International Summit on Food, Nutrition and Health, Dundee & St Andrews, Scotland, UK, December 2025;
"Rheology and Printability of Green Buckwheat Dough for 3D Bio-Food Printing", Singapore Scientific Conference (SSC) 2025, Singapore, December 2025.

COLLABORATIONS

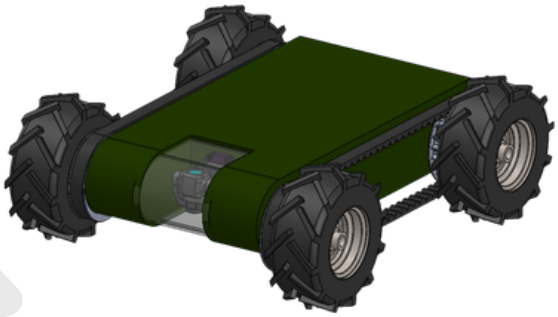
Collision Detection In-Pipe Robot with Continuum Robot Arm

Interdisciplinary partnerships play a vital role in ISSAI's efforts to translate scientific expertise into practical solutions with regional impact. As part of its commitment to interdisciplinary research and impactful regional collaboration, ISSAI worked closely with Dr. Azamat Yeshmukhametov, Head of the Advanced Robotics and Mechatronics Systems (ARMS) Lab, who served as a co-executor in the implementation of scientific research under the project **"Caspian Center for Sustainable Innovation: Scientific and Academic Advancement of Alternative Solutions for the Region's Transition to a Greener Future"** in the Atyrau Region.

Azamat Yeshmukhametov, PhD
Head of Advanced Robotics and Mechatronics laboratory



Screw-driving robot



Mobile robot for indoor inspection

The integration of continuum manipulators into robotic systems for pipe inspection represents a significant advancement in navigating confined environments. These manipulators demonstrate exceptional flexibility and smooth movement, enabled by individually controlled motors that manage cable tension, allowing for complex tasks such as defect detection and object manipulation

This partnership reflects ISSAI's broader approach to fostering meaningful collaboration with leading academic experts, bringing together complementary strengths in applied artificial intelligence, robotics, and scientific innovation. The project stands as an example of how such collaborations can generate practical, forward-looking solutions in support of a more sustainable future.

PUBLICATIONS

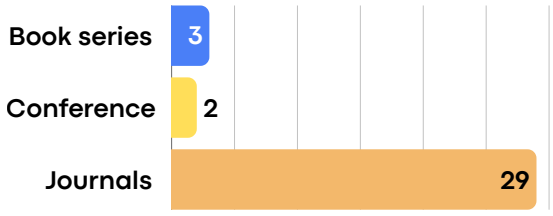
PUBLICATIONS

A significant and essential part of ISSAI's work is the publication of scientific research in journals, conference proceedings, and academic books. Throughout the year, ISSAI researchers continuously developed high-quality manuscripts and submitted their work to respected international publication venues. For the Institute, research activity is fundamental: it drives innovation, validates new approaches through scientific rigor, and ensures that ISSAI's technological developments contribute meaningfully to both the global AI community and Kazakhstan's scientific advancement.

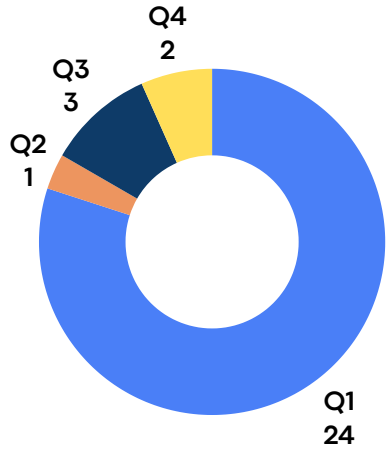
FWCI >1.37

This commitment to research excellence is also reflected in ISSAI's **Field-Weighted Citation Impact (FWCI)**, which stands at 1.37. FWCI measures how often an institution's publications are cited compared to the global average for similar publications in the same field, year, and document type, with 1.00 representing the world average. An FWCI of 1.37 indicates that ISSAI's research output is cited 37% above the global benchmark, highlighting the growing relevance, quality, and international visibility of the Institute's scientific contributions.

In 2025, ISSAI researchers published 34 scientific articles across a diverse range of academic outlets, reflecting the Institute's continued commitment to advancing impactful research. Of these, 3 were published in book series, 2 appeared in conference proceedings as conference papers, and 29 were published in journals as either research articles or conference papers. This publication output highlights both the breadth of ISSAI's scholarly activity and the growing visibility of its research within the international academic community.



Breakdown of Publications by Type



Distribution of Published Articles by Quartile Ranking

ISSAI also places strong emphasis on publishing in Q1 journals, which are ranked within the top 25% of journals in their respective subject categories and are generally regarded as the most influential and academically visible publication venues. Journals classified as Q2 fall within the 25–50% range, Q3 within the 50–75% range, and Q4 within the remaining 25%, making journal quartiles an important benchmark for assessing the relative standing and visibility of research output. As shown in the chart, the majority of ISSAI's publications were placed in Q1 journals, with 24 articles in top-quartile venues, compared to one in Q2, three in Q3, and two in Q4.

PUBLICATIONS

Aubakirov, S., Pak, A., Akhmetov, I., Tleuken, A., Varol, H. A., Akzhalova, A., & Karaca, F. (2025). Beyond buzzwords: NLP reveals common threads in sustainable and circular construction discourse. PeerJ Computer Science, 11. https://doi.org/10.7717/peerj-cs.3085

Baidalin, M., Rakhimzhanova, T., Akhet, A., Baidalina, S., Myrzakhanov, A., Bogapov, I., Salikova, Z., & Varol, H. A. (2025). AI-powered aerial multispectral imaging for forage crop maturity assessment: A case study in northern Kazakhstan. Agronomy, 15(12), 2807. https://doi.org/10.3390/agronomy15122807

Muratov, A., Kuzdeuov, A., & Varol, H. A. (2025). Multilingual speech command recognition with language identification. IECON 2025 – 51st Annual Conference of the IEEE Industrial Electronics Society, 1–6. https://doi.org/10.1109/iecon58223.2025.11221185

Kuzdeuov, A., & Varol, H. A. (2025b). Real-time multispectral human pose estimation. IECON 2025 – 51st Annual Conference of the IEEE Industrial Electronics Society, 1–6. https://doi.org/10.1109/iecon58223.2025.11221477

Lei, C., Shao, W., Yuan, X., Xu, L., Tuzikov, A., Sabirov, R., Calamak, S., Varol, H. A., Sajjad, N., Gul, I., & Qin, P. (2025b). Regional variations in mechanical properties of porcine leptomeninges. Cyborg and Bionic Systems, 6. https://doi.org/10.34133/cbsystems.0462

Zhiyenbayev, A., Abdrakhmanov, R., Varol, H. A., & Yazici, A. (2025). Multi-Modal Vision and language models for real-time emergency response. 2025 IEEE 37th International Conference on Tools with Artificial Intelligence (ICTAI), 1199–1206. https://doi.org/10.1109/ictai66417.2025.00175

Zhiyenbayev, A., Abdrakhmanov, R., Varol, H. A., & Yazici, A. (2025a). Integrating vision-language models and multimodal retrieval for real-time emergency response in Healthcare. 2025 IEEE 37th International Conference on Tools with Artificial Intelligence (ICTAI), 1215–1220. https://doi.org/10.1109/ictai66417.2025.00177

Guo, Z., Chen, H., Mai, X., Qiu, Q., Ma, G., Kappassov, Z., Li, Q., & Chen, N. (2025). Robotic perception with a large tactile-vision-language model for physical property inference. Lecture Notes in Networks and Systems, 146–157. https://doi.org/10.1007/978-3-032-09427-8_14

Kostyukova, V., Sandykbayeva, D., Kappassov, Z., & Orazbayev, B. (2025). Data acquisition and processing of sub-wavelength signals using STM32F4 Discovery Board in acoustics and haptics. Lecture Notes in Networks and Systems, 101–109. https://doi.org/10.1007/978-3-032-09427-8_9

Kairat, M., Adilmetova, G., Ibraimova, I., Gaipov, A., Varol, H. A., & Chan, M.-Y. (2025). Benchmarking ChatGPT and Other Large Language Models for Personalized Stage-Specific Dietary Recommendations in Chronic Kidney Disease. Journal of Clinical Medicine, 14(22), 8033. https://doi.org/10.3390/jcm14228033

PUBLICATIONS

Omarova, Z., Nurmanova, B., Sanatbyek, A., Varol, H. A., & Chan, M.-Y. (2025). Digital mapping of Central Asian Foods: Towards a standardized visual atlas for Nutritional Research. Nutrients, 17(21), 3315. https://doi.org/10.3390/nu17213315

Lissovoy, D., Zakeryanova, A., Orazbayev, R., Rakhimzhanova, T., Lewis, M., Varol, H. A., & Chan, M.-Y. (2025). Hyperspectral imaging for Quality Assessment of Processed Foods: A case study on sugar content in Apple Jam. Foods, 14(21), 3585. https://doi.org/10.3390/foods14213585

Akhmetov, T., Moger, G. D., & Varol, H. A. (2025). Augmented reality multistation warning system using wearable artificial intelligence. 2025 11th International Conference on Control, Automation and Robotics (ICCAR), 483–492. https://doi.org/10.1109/iccar64901.2025.11072945

Safarov, E., Bayramov, E., Safarov, S., Neafie, J., & Hedjazi, A. (2025). Impact of changes in the wind regime on the Caspian Sea level fluctuation and its relationship with SOI and Nao. Scientific Reports, 15(1). https://doi.org/10.1038/s41598-025-20346-6

Akimbay, D., Bushanov, Y., Nursultan, M., Zholtayev, D., Dauletiya, D., Rakhmetova, P., & Yeshmukhametov, A. (2025). A novel hybrid robot for in-pipe maintenance and Inspection. IEEE Access, 13, 168498–168511. https://doi.org/10.1109/access.2025.3609193

Kuzdeuov, A., Nurgaliyev, S., Akhmetov, T., Ezhov, V., Moger, G., & Varol, H. A. (2025). From vision to sound: Enhanced object localization for visually impaired and blind. 2025 11th International Conference on Control, Automation and Robotics (ICCAR), 560–567. https://doi.org/10.1109/iccar64901.2025.11073053

Kuzdeuov, A., & Varol, H. A. (2025). Multilingual speech command recognition for voice controlled robots and Smart Systems. 2025 11th International Conference on Control, Automation and Robotics (ICCAR), 87–93. https://doi.org/10.1109/iccar64901.2025.11073019

Moger, G., & Varol, H. A. (2025). Improbability Roller-2: A Hybrid Mobile Robot with Variable Diameter Transformable Wheels. https://doi.org/10.36227/techrxiv.175259035.54719703/v2

Sanatbyek, A., Rakhimzhanova, T., Nurmanova, B., Omarova, Z., Rakhmankulova, A., Orazbayev, R., Varol, H. A., & Chan, M. Y. (2025). A multitask deep learning model for food scene recognition and portion estimation - The Food Portion Benchmark (FPB) dataset. IEEE Access, 1–1. https://doi.org/10.1109/access.2025.3603287

Ziat, M., Kabdsyhev, N., Topp, S., Duvernoy, B., Milroy, J., & Kappassov, Z. (2024). Evaluation of hapticomm-S for replicating tactile ASL numbers: A comparative analysis of direct and mediated modalities. Lecture Notes in Computer Science, 442–448. https://doi.org/10.1007/978-3-031-70058-3_36

PUBLICATIONS

Neafie, J., Kenzhetayev, K., Laichinova, A., Mavletova, S., Tulegenova, A., Ramazanova, Z., & Bayramov, E. (2025). Energy transition governance in an emerging economy: Opportunities and threats on the road to a sustainable future in Kazakhstan. Environmental Research Letters, 20(8), 084007. https://doi.org/10.1088/1748-9326/addd37

Auyeskhan, U., Turysbekov, G., Roshaven, S. P., Perveen, A., & Talamona, D. (2025). Decision-making framework supported by techno-economic analysis of Laser Powder Bed Fusion: A novel approach using retrieved augmentation generation (RAG). Progress in Additive Manufacturing. https://doi.org/10.1007/s40964-025-01173-7

Shakerimov, A., Altymbek, M., Koganezawa, K., & Yeshmukhametov, A. (2025). Machine learning-based inverse kinematics scalability for prismatic tensegrity structural manipulators. Robotics and Autonomous Systems, 193, 105102. https://doi.org/10.1016/j.robot.2025.105102

Moger, Gourav, Alibek Kakim, Assem Mubarak, Yersaiyn Bushanov, Gulnur Kalimuldina, and Azamat Yeshmukhametov. “Noise-Optimized Signal Processing for Teng-Based Touch Sensing Using I2C Integrated Circuits.” IEEE Sensors Journal, 2025, 1–1. https://doi.org/10.1109/jsen.2025.3567407.

Kuzdeuov, Askat, Miras Zakaryanov, Alim Tleuliyev, and Huseyin Atakan Varol. “OpenThermalPose2: Extending the Open-Source Annotated Thermal Human Pose Dataset with More Data, Subjects, and Poses.” IEEE Transactions on Biometrics, Behavior, and Identity Science, 2025, 1–1. https://doi.org/10.1109/tbiom.2025.3575499.

Mubarak, Assem, Bayandy Sarsembayev, Yerzhigit Serik, Abdirakhman Onabek, Zhanat Kappassov, Zhumabay Bakenov, Kazuyoshi Tsuchiya, and Gulnur Kalimuldina. “Quenched Pvdf/Pmma Porous Matrix for Triboelectric Energy Harvesting and Sensing.” ENERGY & ENVIRONMENTAL MATERIALS 8, no. 1 (January 2025). https://doi.org/10.1002/eem2.12808.

Chibar, Rustam, Valeriya Kostyukova, Soibkhon Khajikhanov, Daryn Kenzhebek, Altay Zhakatayev, Bakhtiyar Orazbayev, and Zhanat Kappassov. “Honeycomb-Inspired Metamaterial for Tactile Sensors with Variable Stiffness.” IEEE Sensors Journal 25, no. 1 (January 1, 2025): 577–86. https://doi.org/10.1109/jsen.2024.3492498.
Bib

Issabek, Moldir, Sabyrzhan Oralkhan, Adeliya Anash, Nuriya Nurbergenova, Azat Balapan, Azamat Yeshmukhametov, Yeltay Rakhmanov, and Gulnur Kalimuldina. “AI-Enhanced Gait Analysis Insole with Self-powered Triboelectric Sensors for Flatfoot Condition Detection.” Advanced Materials Technologies 10, no. 6 (March 18, 2025). https://doi.org/10.1002/admt.202401282.

Keutayeva, Aigerim, China Jesse Nwachukwu, Muslim Alaran, Zhenis Otarbay, and Berdakh Abibullaev. “Neurotechnology in Gaming: A Systematic Review of Visual Evoked Potential-Based Brain-Computer Interfaces.” IEEE Access 13 (2025): 74944–66. https://doi.org/10.1109/access.2025.3564328.

PUBLICATIONS

Adilmetova, Gulnoza, Ruslan Nassyrov, Aizhan Meyerbekova, Aknur Karabay, Huseyin Atakan Varol, and Mei-Yen Chan. "Evaluating Chatgpt's Multilingual Performance in Clinical Nutrition Advice Using Synthetic Medical Text: Insights from Central Asia." The Journal of Nutrition 155, no. 3 (March 2025): 729–35. https://doi.org/10.1016/j.tjnut.2024.12.018.

Karabay, Aknur, Huseyin Atakan Varol, and Mei Yen Chan. "Improved Food Image Recognition by Leveraging Deep Learning and Data-Driven Methods with an Application to Central Asian Food Scene." Scientific Reports 15, no. 1 (April 23, 2025). https://doi.org/10.1038/s41598-025-95770-9.

Shah, Zahid, Emil Bayramov, Jessica Neafie, Reimar Seltmann, and Zohreh Rahnama. "Determination of Geospatial Criteria and Prediction of Potential Areas for Porphyry Copper Deposits in Kazakhstan." Frontiers in Earth Science 13 (March 5, 2025). https://doi.org/10.3389/feart.2025.1489969.

Neafie, Jessica, Maira Albakassova, and Emil Bayramov. "Assessing Socio-Economic and Natural Vulnerability to Oil Spills: A Case Study of Azerbaijan's Caspian Shoreline." International Journal of Water Resources Development 41, no. 1 (2025): 152–75. https://doi.org/10.1080/07900627.2024.2434595.

Balapan, Azat, Rauan Yeralkhan, Alikhan Aryslanov, Gulnur Kalimuldina, and Azamat Yeshmukhametov. "A Novel Pattern Recognition Method for Self-Powered Teng Sensor Embedded to the Robotic Hand." IEEE Access 13 (January 16, 2025): 14101–12. https://doi.org/10.1109/access.2025.3530465.

ISSAI Publications on issai.nu.edu.kz

MEDIA ABOUT ISSAI

MEDIA ABOUT ISSAI

Media Coverage and Public Engagement

In 2025, the Institute of Smart Systems and Artificial Intelligence continued to strengthen its media presence and public engagement, reflecting the growing national and international interest in its work. Over the course of the year, ISSAI was featured in 16 televised news segments and 28 published articles across a wide range of media platforms.

ISSAI actively prioritizes collaboration with leading national media outlets, ensuring that its research, technological developments, and educational initiatives are communicated through the most influential channels in Kazakhstan. At the same time, the Institute remains open and responsive to media inquiries, fostering transparent and accessible dialogue with journalists and the broader public.

A key focus of ISSAI's media strategy is to share its latest advancements in generative artificial intelligence, while also making complex and emerging AI concepts understandable to a wide audience. Through interviews, expert commentary, and feature stories, ISSAI contributes to raising public awareness and building trust in AI technologies.

ISSAI's work has been highlighted not only in prominent Kazakhstani media outlets: such as Khabar, Egemen Qazaqstan, Silk Way, and other long-established platforms with extensive audiences, but also in internationally recognized publications, including Times Higher Education, The Times of Central Asia, and Forbes. These features underscore ISSAI's growing reputation as a key contributor to the global AI landscape.

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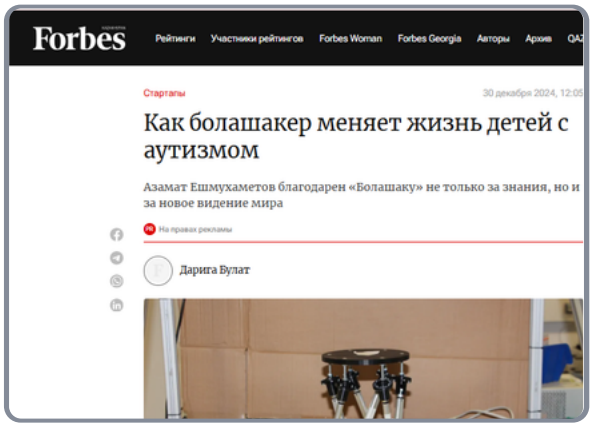

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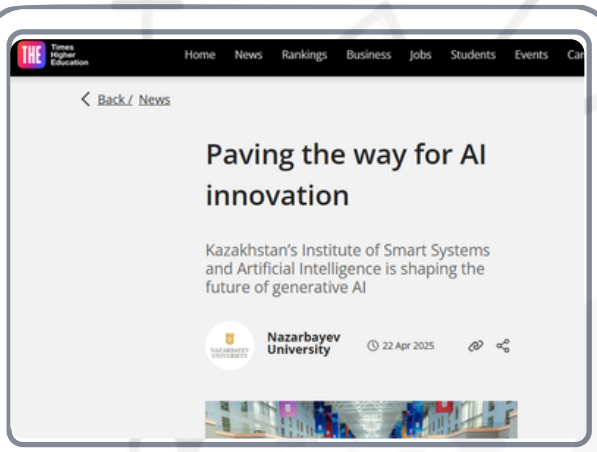

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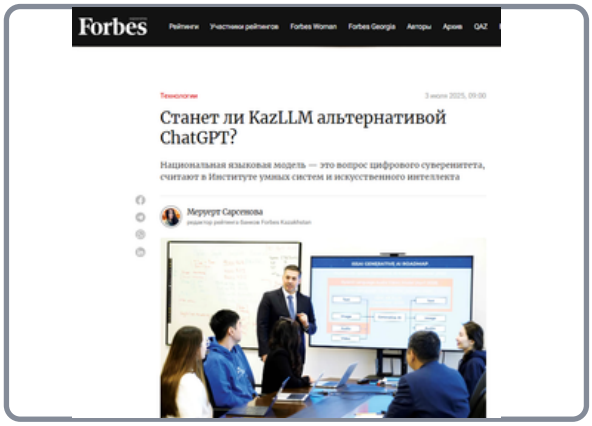

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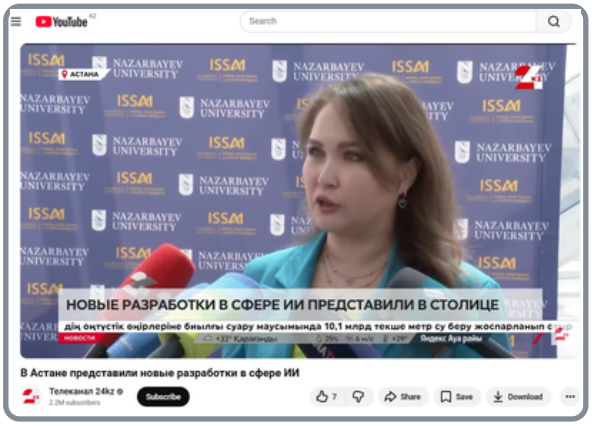

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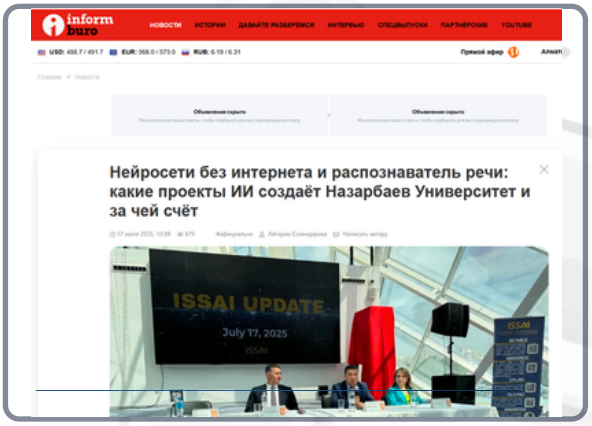

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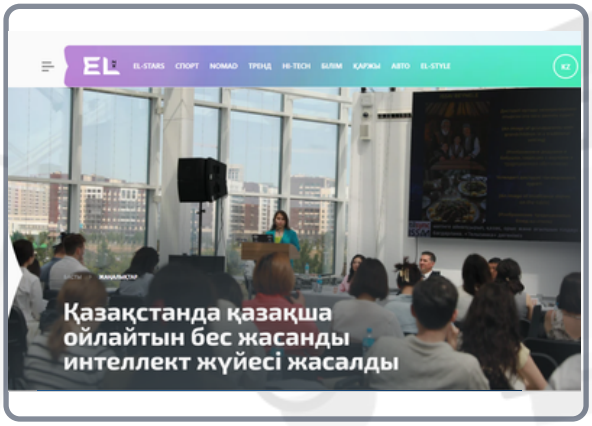

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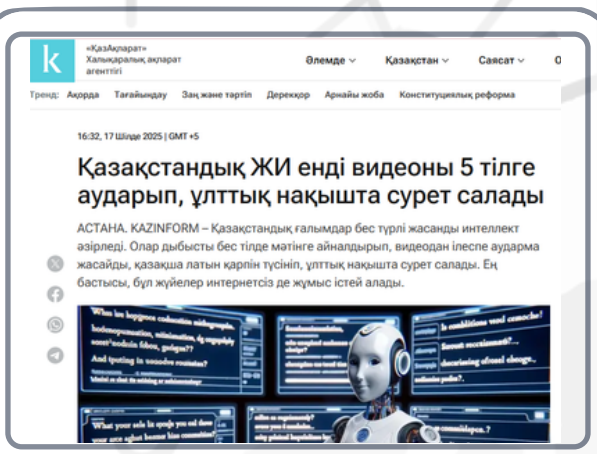

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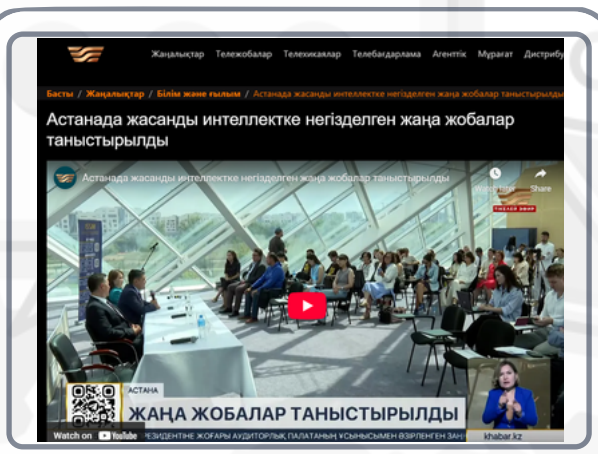

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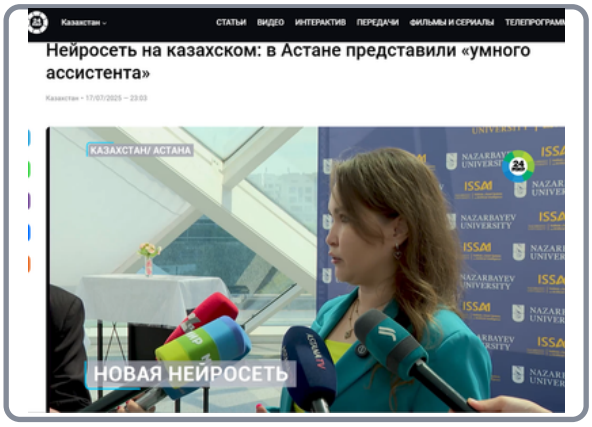

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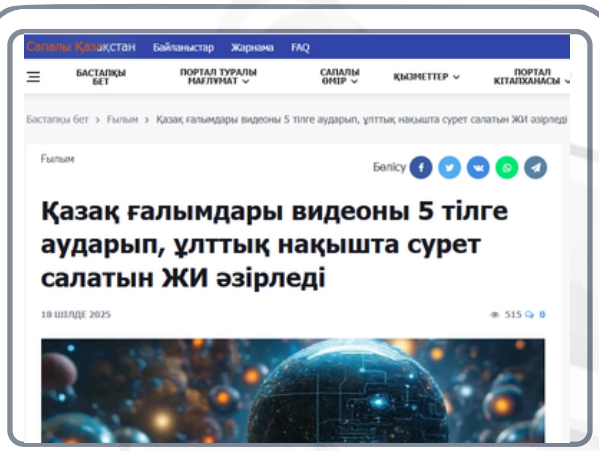

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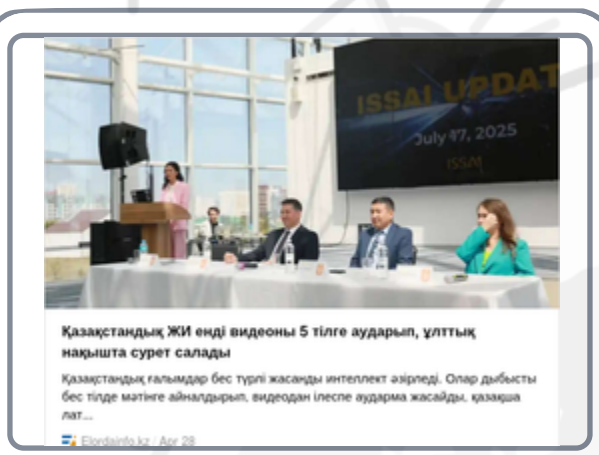

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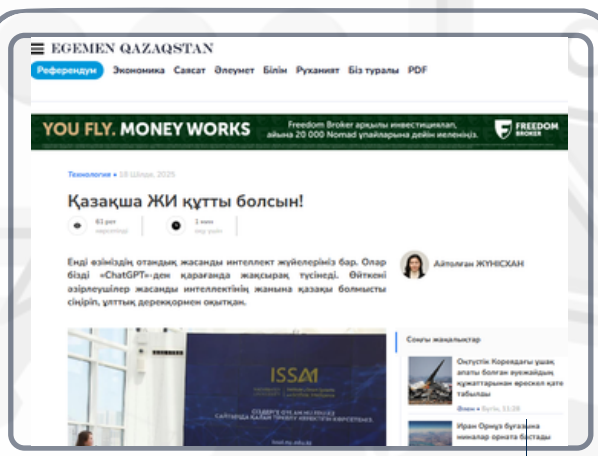

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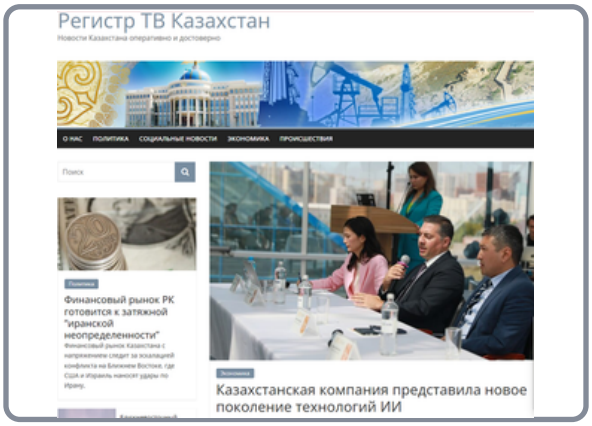

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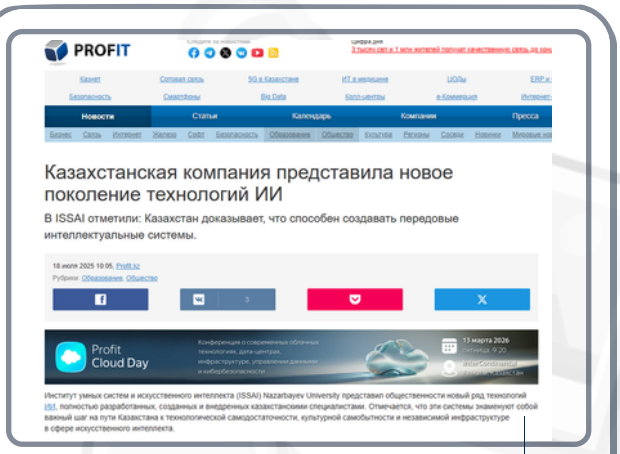

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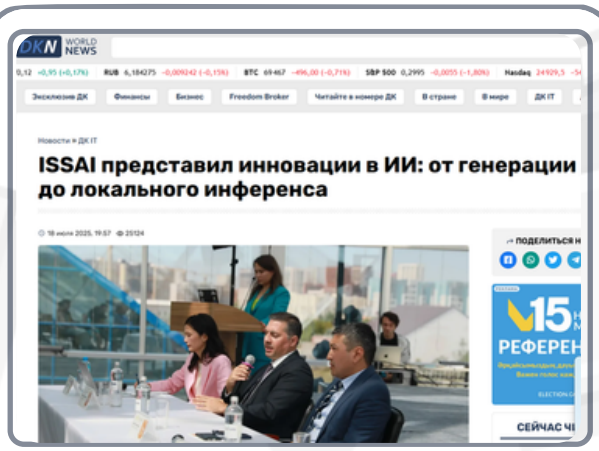

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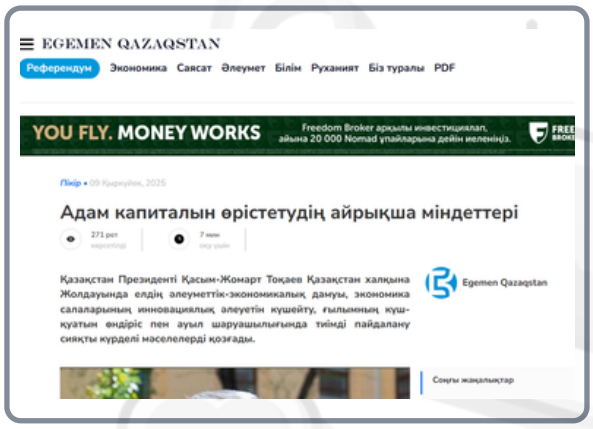

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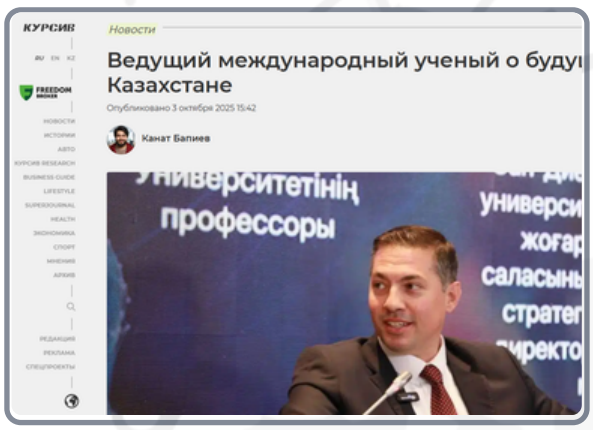

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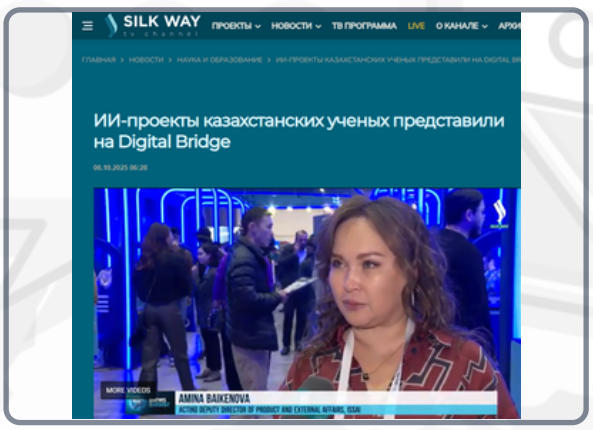

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MEDIA ABOUT ISSAI


BAQ.KZ

Көкпарды танитын ЖИ: қазақ тіліне бейімделген жаңа жүйе таныстырылды

Астанада өткен Digital Bridge 2025 халықаралық форумының аясында ұйымдастырылған стартаптар көрмесінде ондаған инновациялық жоба ұсынылды. Көптеген компаниялар, ғылыми орталықтар мен жас командалар білім беру, медицина, киберқауіпсіздік және робототехника сияқты түрлі бағыттардағы шешімдерін көрсетті, деп хабарлайды BAQ.KZ тілшісі.

[Read more]


В Астане подписан важный меморандум в сфере искусственного интеллекта

В рамках форума Digital Bridge в Астане состоялось подписание значимого меморандума о сотрудничестве в области искусственного интеллекта.

[Read more]


The Times of Central Asia

Kazakhstan | Kyrgyzstan | Tajikistan | Turkmenistan

Made in Kazakhstan: Building an AI for a Nation

On a cold November morning at Al-Farabi University in Almaty, students gathered in a drafty lecture hall, many still wrapped in their coats. The setting was more reminiscent of a forgotten Soviet-era classroom than a venue for cutting-edge technology. But amid the peeling paint and rickety seats, some of the country's most ambitious

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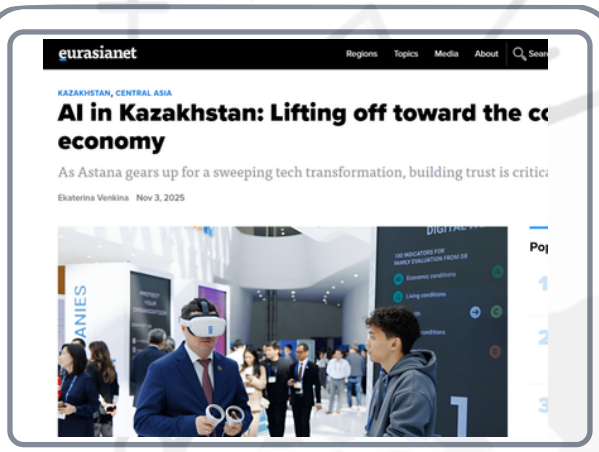
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KAZAKHSTAN, CENTRAL ASIA

AI in Kazakhstan: Lifting off toward the co economy

As Astana gears up for a sweeping tech transformation, building trust is critic

Ekaterina Venkina Nov 3, 2025

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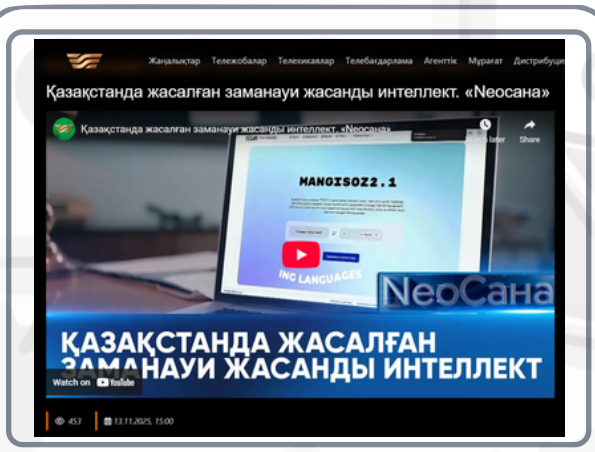

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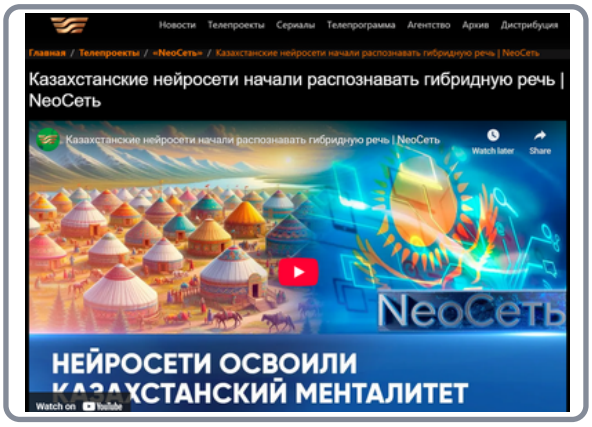

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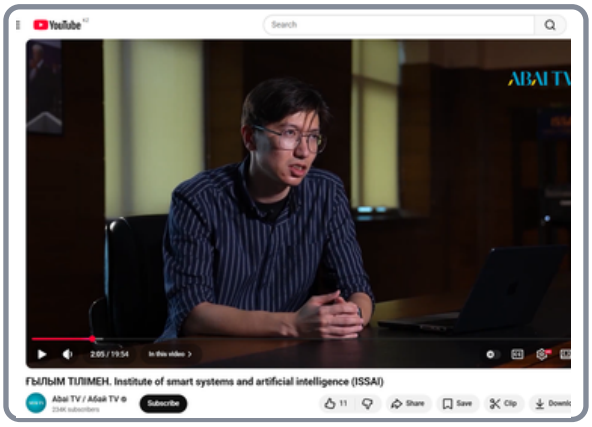

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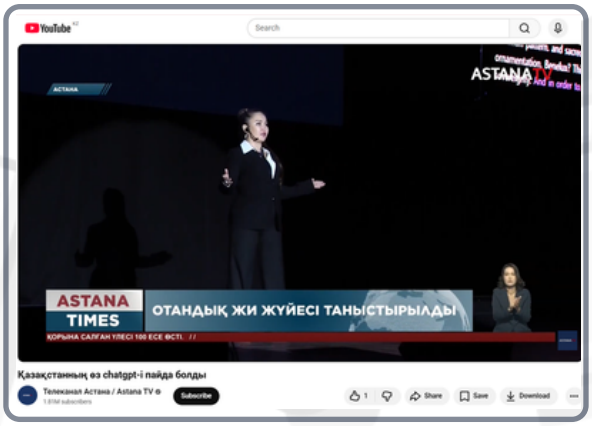

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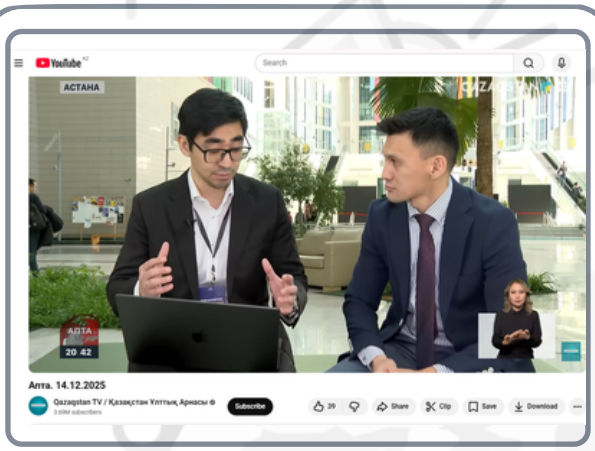

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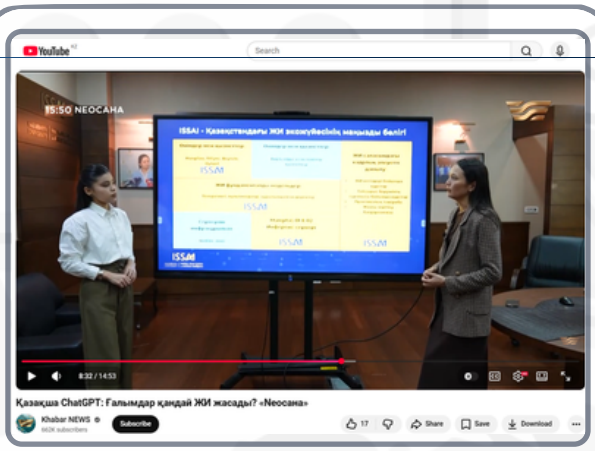

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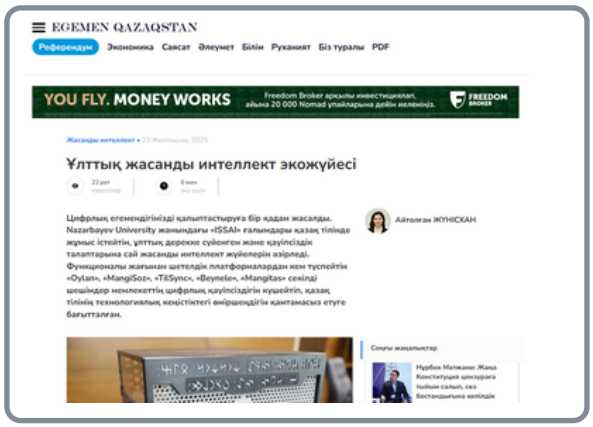

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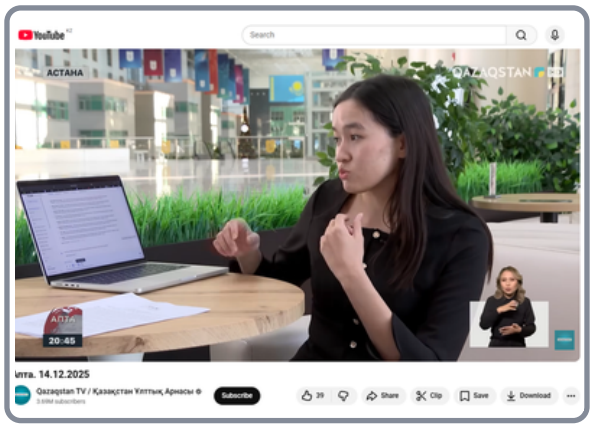

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ISSAI places strong emphasis on building meaningful and professional relationships with the media as part of its broader mission to advance public understanding of artificial intelligence and innovation. Throughout the year, ISSAI actively engaged with media partners to communicate its key research achievements, technological developments, educational initiatives, and national contributions in a timely and accessible manner.

This continued collaboration helped increase the visibility of ISSAI's work, strengthen public trust in AI, and promote informed discussion on the role of emerging technologies in Kazakhstan's development. By maintaining an open and proactive dialogue with the media, ISSAI also contributes to fostering a stronger culture of science communication in the country.


ISSAI
NAZARBAYEV UNIVERSITY
Institute of Smart Systems and Artificial Intelligence
SOCIAL MEDIA

SOCIAL MEDIA

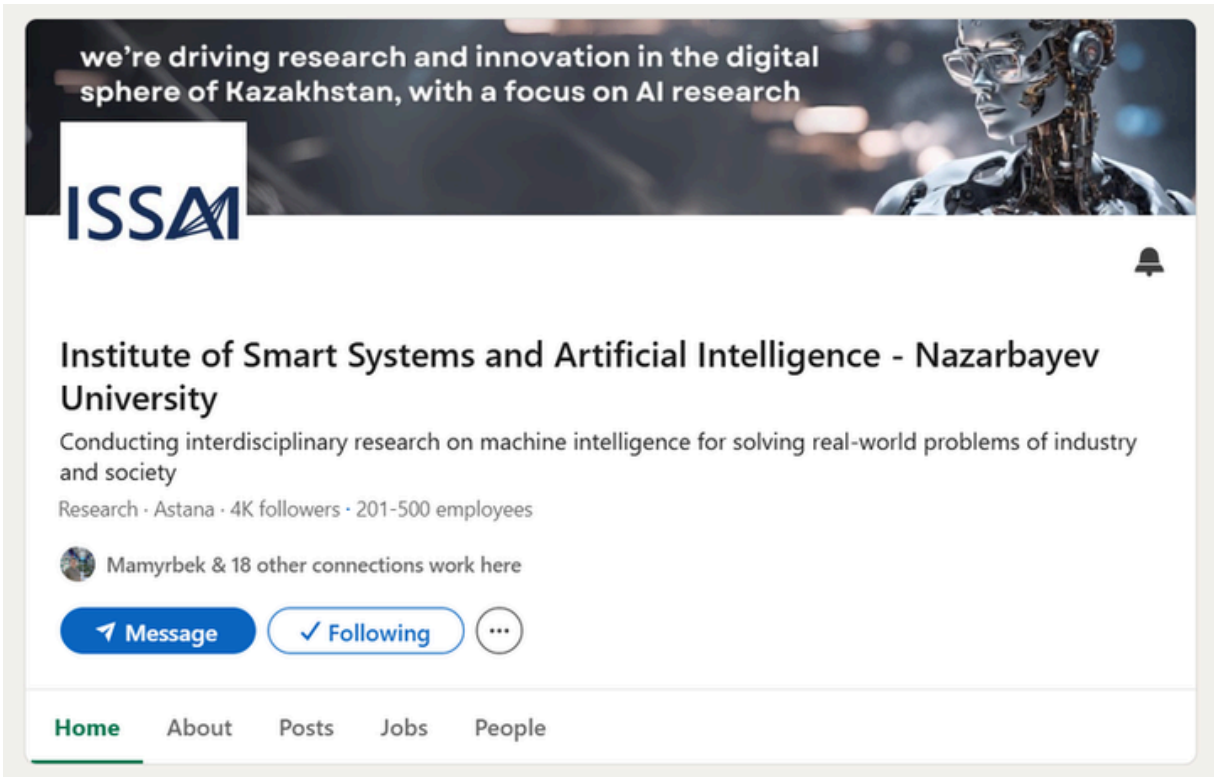
ISSAI places high importance on its presence across social media platforms as an essential channel for public engagement and science communication. Throughout the year, the Institute used social media to share research highlights, product updates, educational opportunities, event coverage, and stories that reflect the impact of its work on society.

As one of the most accessible and effective communication channels, social media also plays a key role in helping ISSAI reach potential partners, prospective clients for its training programs, users of its products, and future applicants to the Summer Research Program. By maintaining an active and thoughtful digital presence, ISSAI continues to strengthen its visibility, foster public interest in artificial intelligence, and expand its growing community in Kazakhstan and beyond.

Today, ISSAI actively maintains its presence across three major social media platforms: **Instagram, LinkedIn, and YouTube**. The Institute continues to refine its social media strategy to ensure a stronger and more effective digital presence, with a focus on presenting its work in a clear, engaging, and visually compelling way. Particular attention is given to improving content quality, expanding audience reach, and increasing meaningful engagement across different stakeholder groups. Through these efforts, ISSAI aims to strengthen its connection with the public and communicate its mission, achievements, and opportunities more effectively.

Compared with 2024, ISSAI's social media platforms demonstrated strong growth in followers, content views, and overall engagement, reflecting the Institute's expanding digital reach and the increasing public interest in its work.

SOCIAL MEDIA



The performance of ISSAI's LinkedIn page in 2025 is presented as follows:

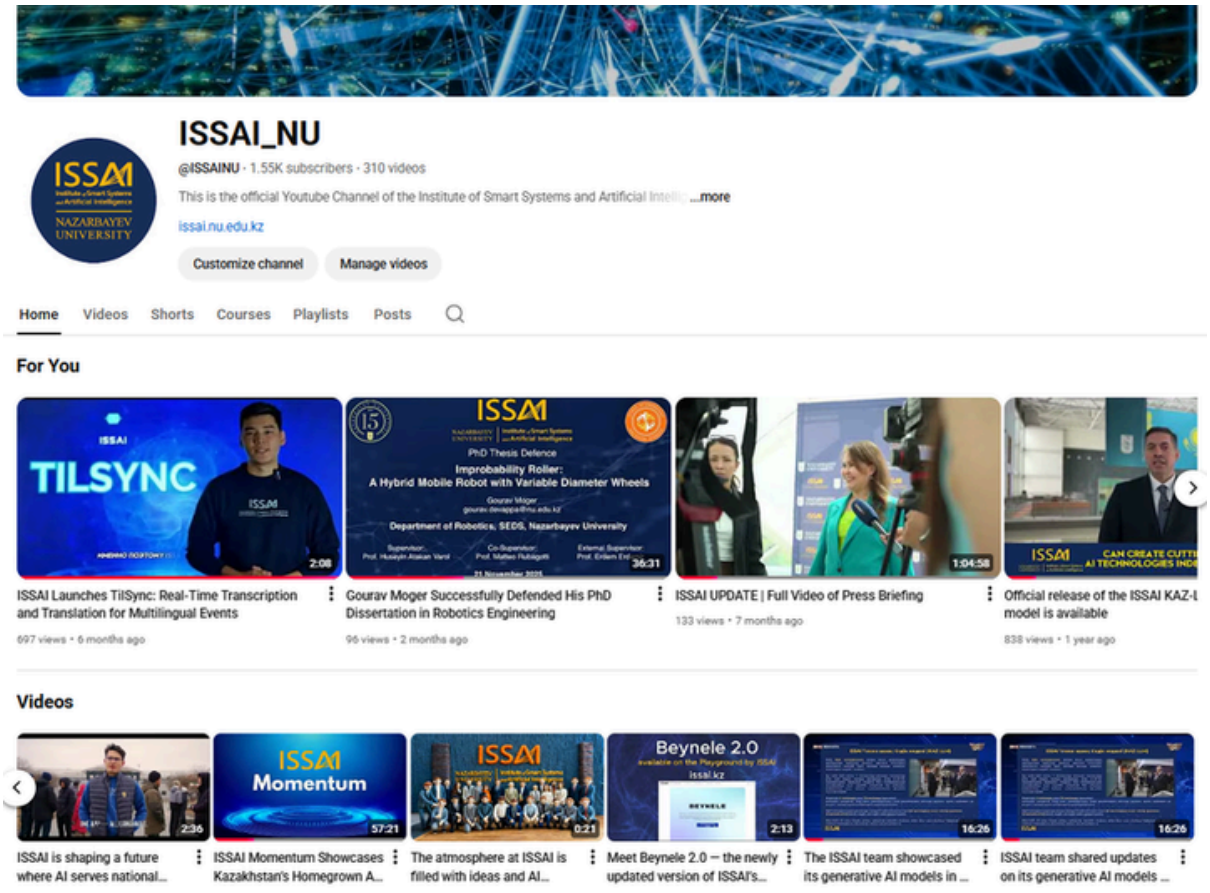
7 154 Views

246 352 Impressions

2897 Followers

SOCIAL MEDIA

YouTube



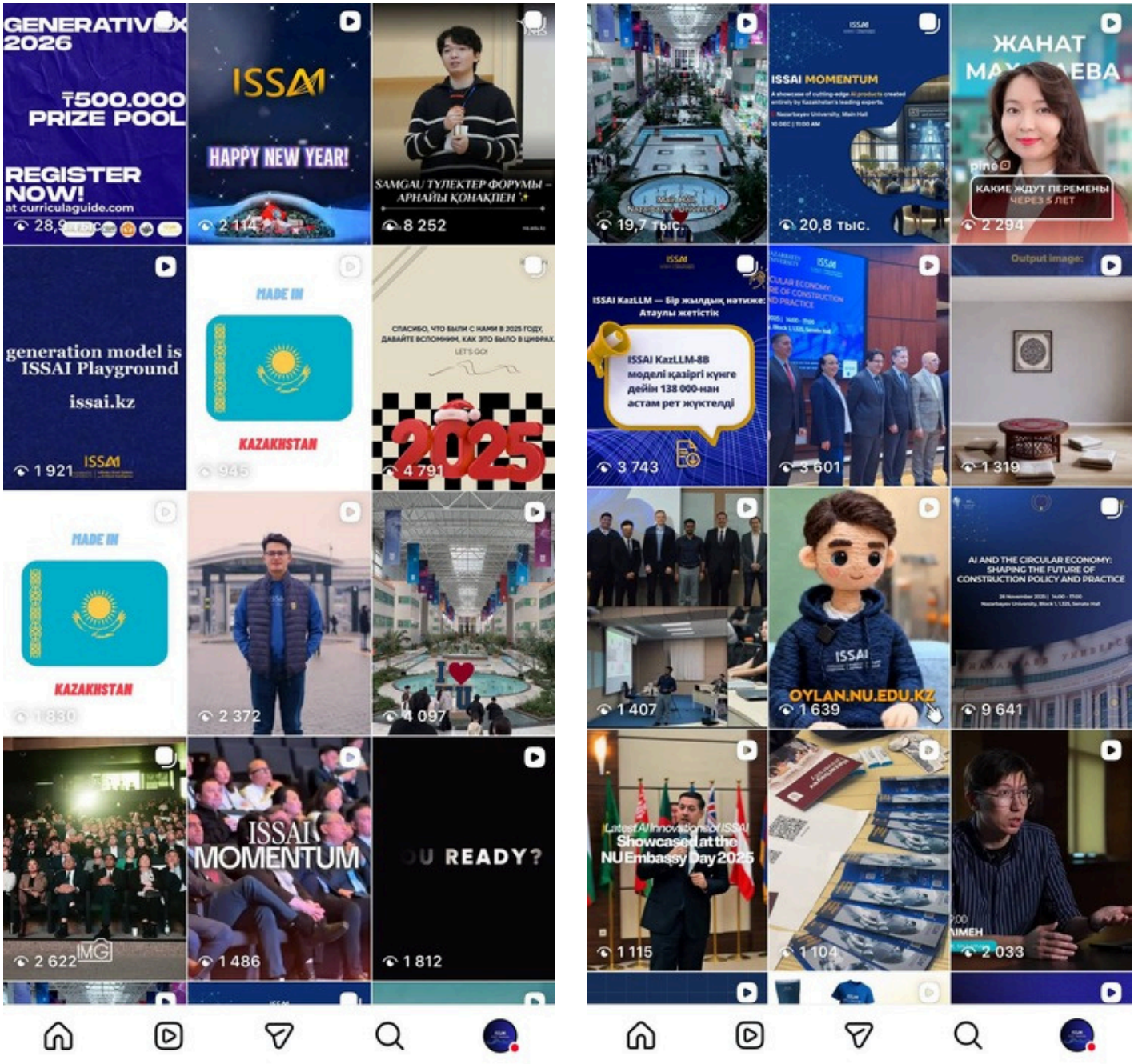
The performance of ISSAI's YouTube page in 2025 is presented as follows:

36 661 Views

269,2k Impressions

+ 400 Followers

SOCIAL MEDIA



The performance of ISSAI's Instagram page in 2025 is presented as follows:

3411 Followers

More than 1.5m views

MEMBERSHIP AND PARTNERSHIPS

MEMBERSHIP AND PARTNERSHIPS

ISSAI Joins Astana Hub Technopark to Boost Innovation and Growth

On April 11, ISSAI officially became a participant of the Astana Hub Technopark - Kazakhstan's leading international technology park for IT startups and innovation-driven companies. Astana Hub is an international innovation cluster that offers access to mentoring, educational programs, industry events, investment opportunities, and a dynamic ecosystem for developing innovative projects.

For ISSAI, membership in Astana Hub provides a strategic platform to accelerate AI research, strengthen product development, and expand collaboration within Kazakhstan's innovation landscape. This partnership reinforces ISSAI's mission to advance artificial intelligence and amplifies the Institute's contribution to the country's rapidly growing digital economy, while also increasing its visibility and reach internationally.

Memoranda of Understanding

Signing memorandums of cooperation is an important part of ISSAI's long-term development strategy. Such agreements create a formal foundation for collaboration, enabling the Institute to expand joint research, launch new educational initiatives, and strengthen connections with national and international partners. In the context of a rapidly evolving AI landscape, these partnerships help ISSAI increase its impact, share expertise, and accelerate innovation.

Qazqode LLP, KaRtel LLP
Date of signing: 13.01.25

Razzakov Kyrgyz State Technical University
Date of signing: 02.10.2025

Kozybayev University
Date of signing: 10.02.25

ShaiPro
Date of signing: 02.10.2025

Communal State Institution "School-Nursery-Kindergarten Complex" of Education Administration of East Kazakhstan Region
Date of signing: 16.05.2025

Korkyt Ata Kyzylorda University
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CONTACTS

We are always open for collaboration.

issai@nu.edu.kz

issai.nu.edu.kz

53, Kabanbay Batyr Avenue, Block 1,
Nazarbayev University, Astana 010000, Kazakhstan

ISSAI on 2GIS

+7 (7172) 70-5981
+7 (7172) 70-6139