



RESEARCH NEWSLETTER

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New grants and awards

GRANT FUNDING FROM THE MINISTRY OF EDUCATION AND SCIENCE

We are thrilled to announce the accomplishments of our dedicated researchers who have received research grants from the Ministry of Education and Science. The Ministry acknowledges the pivotal role of research in advancing knowledge and fostering societal progress. We take immense pride in the fact that fifteen esteemed faculty members from our institution have been chosen for the Grant Funding program for the period of 2023-2025, while eight researchers have been awarded grants under the Young Researchers scheme. These granted projects cover a broad spectrum of disciplines, ranging from health sciences to power engineering, showcasing the diverse expertise and multidimensional nature of our community. Below is the list of all awardees and their projects:

No	Project title	PI	School	Grant scheme
1	Control of thermal energy transport by interfacial and point defect engineering in nuclear materials	Zhandos Utegulov	SSH	Grant Funding
2	Lithographically defined synthesis of 2D transition metal dichalcogenides for electrochemical hydrogen generation	Alexander Tikhonov	SSH	Grant Funding
3	Modeling, Analysis and Optimization of MEMS and magMEMS	Piotr Sebastian Skrzypacz	SSH	Grant Funding
4	Analysis of dispersive nonlinear partial differential equations in weighted Sobolev spaces	Alejandro Javier Castro Castilla	SSH	Grant Funding
5	Boosting the photocatalytic activity of 2D-TiO ₂ thin films by surface-modification with plasmonic nanoparticles	Timur Atabaev	SSH	Grant Funding
6	Synthesis of tungsten trioxide based coatings and their photocatalytic properties modification with pulsed high-current ion beam	Marat Kaikanov	SSH	Grant Funding
7	Improved Hardy-type inequalities	Durvudkhan Suragan	SSH	Grant Funding
8	Integrating Physic-Informed Neural Network, Bayesian and Convolutional Neural Networks for early breast cancer detection using thermography	Yong Zhao	SEDS	Grant Funding

9	Enhancing energy resolution of Microwave Kinetic Inductance Detectors for astronomy and cosmology purposes	Mehdi Shafiee	SEDS	Grant Funding
10	In silico drug-discovery for molecular generation, drug-target affinity binding prediction and validation of drug-like molecules with machine learning	Siamac Fazli	SEDS	Grant Funding
11	Secure and Optimal Net-Zero Energy Communication Networks with Power-Collecting Metasurfaces	Galymzhan Nauryzbayev	SEDS	Grant Funding
12	Design and Development of Novel EH and WPT Modules to Realize Practical SWIPT System for IoT Framework	Mohammad Hashmi	SEDS	Grant Funding
13	Optimization Framework for Mobile Edge/Cloud Computing to Achieve Energy Efficiency	Bui Mao Dinh	SEDS	Grant Funding
14	Seismic microzonation and hazard assessment with local site effects in Kazakhstan	Sung Moon	SEDS	Grant Funding
15	Studying the formation of star clusters with combined magnetohydrodynamics and N-body simulations	Bekdaulet Shukirgaliyev	Office of the Provost	Grant Funding
16	Novel bifunctional radiological contrast agents based on carbon quantum dots	Timur Atabaev	SSH	Young Researchers
17	Detection of monkeypox virus based on an electrochemical impedance spectroscopy biosensor	Damira Kanayeva	SSH	Young Researchers
18	The framework of the fracture network in the subsurface using data-driven models and mathematical models	Yerlan Amanbek	SSH	Young Researchers
19	Subwavelength imaging in turbid media using acoustic and electromagnetic metamaterials	Bakhtiyar Orazbayev	SSH	Young Researchers
20	Investigation of stability and efficiency of perovskite-based solar cells for indoor applications	Annie Ng	SEDS	Young Researchers
21	High-Performance advanced materials for aqueous sodium-ion batteries	Aishuak Konarov	SEDS	Young Researchers
22	Design and control multilayer tensegrity robot structure	Azamat Yeshmukhamtetov	SEDS	Young Researchers
23	What is the future of endorheic lakes in Northern Kazakhstan?	Marzhan Baigaliyeva	SMG	Young Researchers

We congratulate each researcher on this well-deserved achievement! May you continue to excel in your endeavors, inspire others with your passion and dedication, and leave an indelible mark on Kazakhstani scientific community.

OPEN RESEARCH GRANT CALL FOR FACULTY MEMBERS

We would like to remind all faculty members of Assistant Professor rank and above about the two active internally funded opportunities under the Faculty Development Competitive Research Grants Program (FDCRGP) scheme:

- 1. Faculty Development Competitive Research Grants Program 2024-2026**
- 2. Special Artificial Intelligence (AI) and Data Science Competitive Research Grants Program for 2024-2026**

FDCRGP was initiated in 2017 and is one of the funding instruments of Nazarbayev University to advance its research excellence. This program covers both basic and applied research, extending its support to faculty members. Its primary objectives are to foster the training, development, and mentorship of aspiring young researchers, while also advancing knowledge across various research domains. As an institution, NU remains committed to nurturing and empowering its scientists, providing them with the necessary resources, and creating an environment that fosters creativity and collaboration.

Proposals may be submitted within the period from May 23 to August 4, 2023 at 11:00 AM Astana Time for preliminary internal technical review via Pure system. The final deadline for submission for these grant calls is August 15, 2023 at 11:00 AM Astana time. The grants requirements and documents package are available on the [internal NU website](#).

Please contact us if you have questions:

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Graduate School of Business News

NUGSB–FUQUA SYMPOSIUM ON MARKETING AND ECONOMICS



On May 24, 2023, Nazarbayev University Graduate School of Business and Fuqua Business School at Duke University hosted a one-day symposium on Marketing and Economics that showcased research done by GSB faculty and by Fuqua faculty. The papers in this symposium exposed different methodological approaches, ranging from analytical to

empirical methods, and explored a diverse set of topics in the fields of Marketing and Economics. The symposium consisted of 30-minute presentations by GSB and Fuqua faculty.

PANEL SESSION ON: «INSIDE THE BLACK BOX: GLOBAL AND LOCAL TRENDS IN WEALTH MANAGEMENT»

On May 12, GSB was hosting a panel session moderated by prof Gabriele Lattanzio.

The private wealth management industry has already gained tremendous interest among the residents of Central Asia today. Over the past decades, the industry has grown exponentially, including through the active development of new funds. However, the Covid pandemic, inflationary pressures



and stock market adjustments in major markets have raised new questions for the area of wealth management, and the area is now in a phase of historical restructuring. And as in the current environment, private equity managers can protect their competitive position to continue to grow and justify higher fees. What do these changes mean for investors?

Invited experts discussed these and a number of other important issues during the panel session.

NUGSB HOSTED MR. ANDREW MAIN WILSON, THE CEO OF THE ASSOCIATION OF MBAS (AMBA) AND BUSINESS GRADUATES ASSOCIATION (BGA)



AMBA is one of the “triple crown” accreditation organizations for business schools with a prestigious group of only 300 schools who have earned AMBA accreditation. NUGSB is currently in stage 2 of the 3-stage process toward AMBA accreditation. During his campus visit, Mr. Wilson met with NU President Shigeo Katsu to learn about the vision and mission of Nazarbayev University, and discussed the impact of the business school in Astana and the region. The visit was focused on

accreditation and included meetings with the GSB acting Dean Dr. Joep Konings, Vice Dean for Academic Affairs and Accreditation Dr. Jenifer Lewis, the GSB accreditation team, faculty, staff, and students. Additionally, Mr. Wilson met with the Provost’s office to learn about institutional level support for accreditation and academic quality assurance. Following the visit, GSB has now also received approved membership in the Business Graduates Association, a sister organization of AMBA. BGA schools share their commitment to responsible management practices, lifelong learning, and delivering positive impact for Business School stakeholders. GSB is now the 250th member school in the BGA network.

NAZARBAYEV UNIVERSITY’S NEW REPRESENTATIVE OFFICE IN ALMATY



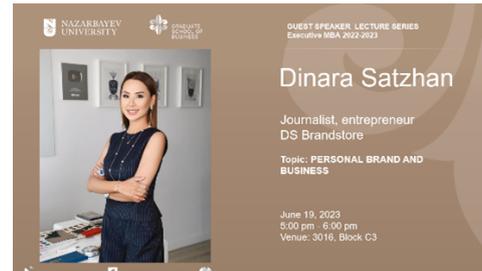
The University is launching short-term training programs in Almaty, with MBA and EMBA courses in Russian, with simultaneous translation into Kazakh and Russian. Thus, on May 19-20, the Almaty campus successfully hosted a pilot training session on the Negotiations led by Prof. Onajomo Akemu. The seminar generated significant interest among professionals in the banking and financial sectors.

GUEST LECTURES AND TALKS



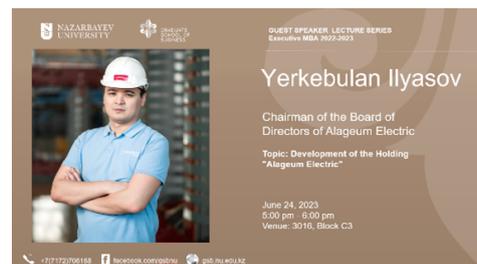
On June 19, GSB hosted Mr. Renat Bekturov, Governor of the AIFC, invited by Prof. Bektemir Ysmailov as a part of the course in Corporate Finance. Mr. Bekturov has a profound knowledge of the industry, coupled with his leadership role in an international financial center. The lecture was an exceptional opportunity for all aspiring finance professionals and future leaders. Topic of the talk: “Unlocking Opportunities: Fostering Mobilization of capital through Astana International Financial Center (AIFC)”.

On June 19, GSB also hosted Dinara Satzhan, journalist, personal brand expert, entrepreneur, fashion producer, and content maker. Dinara presented the topic “Personal Brand and Business”.



On June 21, GSB hosted Darmen Sadvakasov with a business talk on the topic «Challenges in the labor market: is there another economy besides the economy of jobs?». Darmen Sadvakasov is International Grandmaster, Vice President of the Chess Federation of Kazakhstan, member of the Council for Youth Policy under the President of the Republic of Kazakhstan, founder & managing partner of Dasco Capital Ltd and Dasco Consulting Group. Dasco Consulting Group provides management, strategic, technological, legal, tax and customs consulting services. At the event, Darmen shared his expert opinion on the main challenges and changes in today’s labor market, as well as his ideas for other economic models.

On June 24, GSB hosted Mr. Yerkebulan Ilyasov, Chairman of the Board of Directors of Alageum Electric. Mr. Ilyasov talked about the development of the Alageum Electric holding—the largest electrical engineering company in Kazakhstan.



There was also a guest lecture by Mr. Timur Syzdykov, KPMG Partner, on June 24, as a part of EMBA Corporate Finance class. The lecture was about the methods and challenges of business valuation in Kazakhstan. Business valuation is a key step in raising equity capital for a business and in M&A transactions.

MEDIA COVERAGE



Published research by Dr. David DeRemer was recently featured on television by Atamaken Business News, «[Air pollution increases crime—a study](#)» and in an article by the online newspaper London Loves Business, «[Air pollution increases crime rate, finds new research](#)». In the interviews, Dr. DeRemer emphasized evidence that air pollution impairs not only long-term health but also immediate decision-making. One economic consequence is higher crime in Almaty, as found in his study, while researchers elsewhere have found that air pollution also causes distortions in investor decisions and decreased worker productivity. Much of the impact on Almaty crime is observed in thefts, which account for over two-thirds of crimes reported in the city.

Dr. DeRemer’s study, co-authored with Birzhan Batkeyev of Kazakh-British Technical University, focuses on Almaty over three winters due to fine data availability for city crime from Qamqor.gov.kz and PM2.5 air pollution from AirKaz.org. Due to Almaty’s proximity to the Trans-Ili Alatau Range, clean mountain winds and temperature inversions create quasi-experimental variation in air pollution suitable for identifying its effect on crime. A temperature inversion occurs when high temperatures at higher elevations trap dirty air in the city, as seen in the accompanying photo taken by Dr. DeRemer during a February 2019 hike to Almaty’s Kok Zhailyu. According to IQAir, Almaty ranks among the worst 2% of cities worldwide in winter based on PM2.5 air pollution, while Karagandy consistently ranks as the most polluted among Kazakhstan’s urban areas. The research results suggest that planned modernization and coal phase-out for Combined Heat and Power Plant 2 (CHP-2), Almaty’s biggest source of heating, would immediately help to improve the city’s economy and quality of life. The research was supported by Dr. DeRemer’s NU Social Policy Grant.

Reference: Batkeyev, B., & DeRemer, D.R. (2023). Mountains of evidence: The effects of abnormal air pollution on crime. *Journal of Economic Behavior & Organization*, 210, 288-319. doi:[10.1016/j.jebo.2023.04.009](https://doi.org/10.1016/j.jebo.2023.04.009)

RESEARCH SEMINARS

April 26: Oliver De Groot (U. Liverpool Management School) presented his paper, «US Monetary Policy at the Height of the Financial Crisis: A Constrained Optimal Policy Projections Perspective»(Economics).

May 3: Zhandos Ybrayev (National Bank of Kazakhstan) presented “Macprudential and Monetary Policy Coordination: Lessons from the Debt Service-to-Income Cap Implementation and Credit Cycle in Kazakhstan” (Economics).

May 12: Joanne Snel and Milena Brautigam (Erasmus U. Rotterdam) presented a paper «Choices on the labour market: employee status, working hours, and paternity leave» (Economics).

May 17: Jiyang Dong (GSB) presented a paper «Till Differences Do Them Part: Intergenerational Co-Governance and Attention to Strategic Transformation in Family Firms» (Entrepreneurship)

May 19: Gabriele Lattanzio (GSB) presented a paper «The trade off between privacy protection and access to finance: evidence from emerging markets» (Finance).

May 31: Sneh Shakti (NU Leadership Center) presented a paper «Beauty in Organisations» supervised by GSB's Assistant Professor Chandra Pathki (Management).

June 12: Ivailo Izvorski (World Bank) presented “World Bank Europe and Central Asia economic update and economic growth” (Economics).

June 27: Bektemir Ysmailov (GSB) presented a paper «Intangible Capital and Corporate Marketable Securities» (Finance).

OPEN SESSIONS AND INFORMATION EVENTS

May 4: Jiyang Dong presented «Data as a new oil: Alibaba's multi-billion business model built on data analytics» at the MBA open session.

May 4: Tom Vinaimont presented “Financial Markets during the Crisis periods” at the MSF open session, together with the representatives of the National Bank of RK.

May 18: Information session about the Full-time MBA program with the Associate Professor and Vice Dean of GSB Venkat Subramanian took place in Almaty.

A series of Business Breakfasts took place in various cities of Kazakhstan: on May 31 in Atyrau, on June 1 in Aktau, on June 5 in Almaty, on June 6 in Shymkent, and on June 14 in Astana.

BUSINESS DIGEST

[“A Business Model for Visual Anthropology?”](#) by Alexander Parkyn-Smith [“Breaking Boundaries: The Agile Journey of Migrant Russian Women Entrepreneurs”](#) by Yelena Muzykina, Nurlykhan Aljanova, and Shumaila Yousafzai.

PRESENTATIONS

Dr. David DeRemer presented «Exporter Influence, Globalization Backlash, and Rules vs. Power-Based Trade Agreements» at the Spring Midwest International Trade Conference hosted by the University of Tennessee's Haslem College of Business in Knoxville, USA on 29 April.

Dr. David DeRemer presented «The Principle of Reciprocity in the 21st Century» at the Lisbon Meetings in Game Theory and Applications hosted by the Lisbon School of Economics and Management (ISEG) in Portugal on 1 June.

PUBLICATIONS

Zarema Khon has a paper published in Journal of Experimental Psychology: Applied (ABS 4) joint with Batteux, E., Bilovich, A., Johnson, S. G. B., and Tuckett, D. Title of the paper: *“When do consumers favor overly precise information about investment returns?”*. DOI: [10.1037/xap0000465](https://doi.org/10.1037/xap0000465)

Shumaila Yousafzai has a paper accepted in Entrepreneurship theory and Practice (A* and FT50 journal). Title of the paper: *«Epistemic injustice and epistemic resistance: An intersectional study of women’s entrepreneurship under occupation and patriarchy»*.

Mustafa Karataş has a paper accepted in PNAS (Proceedings of the National Academy of Science) (IF: 13.45) joint with Cutright, K. Title of the paper: *“Thinking About God Increases Acceptance of Artificial Intelligence in Decision Making”*.

Mustafa Karataş has a paper conditionally accepted in the International Journal of Research in Marketing (ABDC Rank: A*; ABS Rank: 4; IF: 8.05) joint with Lefkeli, D. and Gürhan-Canli, Z. Title of the paper: *“Sharing Information with AI (vs Human) Impairs Brand Trust: The Role of Audience Size Inferences and Sense of Exploitation”*.

Thierry Post has a paper accepted in Management Science (5-yr impact factor 7.772) joint with Arvanitis, S. Title of the publication: *“Generalized Stochastic Arbitrage Opportunities”*.

Gabriele Lattanzio has a paper accepted in the Journal of Corporate Finance joint with Ma, M. Title of the paper: *“Cybersecurity Risk and Corporate Innovation”*.



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ABOUT US

The Nazarbayev University's Research Centre for Entrepreneurship (NURCE) is a research centre within the Graduate School of Business (GSB) at Nazarbayev University (NU). NURCE aspires to become a leading centre of research excellence in the field of entrepreneurship.

OBJECTIVES AND VALUES

NURCE strives to develop strong external connections with regional, national and international enterprise research in universities, economic development, business and other networks. Our journey to achieve these objectives is guided by the following values:

- Integrity — We maintain the highest ethical standards in conducting and publishing our research.
- Curiosity — We encourage intellectual curiosity.
- Collaboration — We promote interdisciplinary collaboration.
- Capacity — We aim to enhance the productive capacity of our members, students, and promote social value through the centre activities.

PROJECTS:

- *Towards a gender-aware entrepreneurial ecosystem for women's entrepreneurship: A study of Kazakhstan's and Kyrgyzstan's community-based tourism sector (2022- 2024).* This project is supported by Faculty Development Grant from Nazarbayev University Grant No. 11022021FD2913.
- *When Failure is not the End: Entrepreneurial Restart within Kazakhstan's Technology Landscape (2022-2024).* This project is supported by the Faculty Development Grant from Nazarbayev University Grant No. 11022021FD2922.
- *Value creation within Kazakhstan's Entrepreneurial Ecosystem: Towards an Understanding of Informal and Formal Entrepreneurs (2022-2024).* This project is supported by the Collaborative Research Grant from Nazarbayev University Grant No. 11022021CRP1510
- *Mapping the Entrepreneurial Ecosystem (EES) for Women Entrepreneurs of Kazakhstan (2022-2024).* This project is supported by the Ministry of Eductaion Grant, Government of Kazakhstan, Grant No. IRN AP14871324.

AWARDS



Roy, N., Baskynbayeva N., Paromita, Aljanova N., Ghosh A., "Decolonizing Feminist 'Knowledge': 'The Modern Woman' in Kazakh Influencer Culture" has been selected as a finalist for the 2023 Carolyn Dexter Award for Best International Paper. 83rd Annual Meeting of the Academy of Management in Boston, Massachusetts, USA, 4-8 August, 2023.



This paper examines gendered influencer cultures and the construction of women's subjectivities in Post-Soviet Kazakhstan, focusing on three popular female influencers and their followers. By challenging dominant Western feminist frameworks, the study uncovers underlying imperialistic knowledge construction and explores the concept of the modern woman, shaped by historical legacies and lived realities. By combining postcolonialism and post-socialism, the paper aims to decolonize Western feminist theoretical paradigms and expand the understanding of transnational intersectionality in gendered influencer culture.

INTERNATIONAL WORKSHOP

We are delighted to announce that five abstracts have been accepted for the International Workshop on «Entrepreneurship as Driver of Economic and Social Change: Insights from Eastern Europe, South Caucasus, and Central Asia,» scheduled to take place in Tbilisi, Georgia, from 20-23 September 2023. The workshop is fully funded by the German Academic Exchange Service (DAAD).

Accepted abstracts are as follows:

- *Unleashing the Power of Entrepreneurship: Decolonizing Systems, Empowering Communities in Uzbekistan* - Shumaila Yousafzai, Nurlykhan Aljanova, Wojdan Omran
- *Forging a Path to Circular Prosperity: Entrepreneurship, Sustainability, and Policy Reform in Kazakhstan* - Nurlyaiym Zhaksybayeva and Shumaila Yousafzai
- *Embracing Resilience and Forging New Horizons: The Untold Stories of Migrant Women Entrepreneurs* - Yelena Muzykina, Nurlykhan Aljanova, Shumaila Yousafzai
- *Empowering Women Entrepreneurs: Local Government as the Cornerstone of Success* - Nurlykhan Aljanova, Nurlyaiym Zhaksybayeva, and Shumaila Yousafzai
- *Can Entrepreneurship Ignite Kazakh Cultural Resurgence and Identity Reclamation in the Era of Decolonization?* - Chaia Amina, Nurbayeva Alua, Nurlykhan Aljanova, and Yousafzai Shumaila

GUEST LECTURES



NURCE hosted an event on May 11 featuring a guest lecture by Akbota Sabetova, a renowned mentor, speaker, and business consultant. Akbota shared her valuable insights on effective strategies and common mistakes in the process of building a personal brand. During the event, Akbota drew from her extensive experience working with entrepreneurs and experts from various parts of the world, including Kazakhstan, the USA, Poland, and more.

Akbota shed light on the pitfalls to avoid when building a personal brand and highlighted the significance of incorporating an entrepreneur’s personal brand into a company’s overall development strategy. The mastermind session provided attendees with practical guidance and actionable tips to kickstart their personal branding journey. Participants gained valuable knowledge on the essential steps to take and the potential obstacles to watch out for along the way.



We are pleased to provide you with a summary of our recent lecture held on May 24 featuring Marina Egorova, the CEO and Founder of SMART AND TALENTED, the largest business assistant school and agency in Russia.

Marina’s extensive experience in building successful businesses and collaborating with renowned brands in Russia and worldwide made her an invaluable speaker for this event. Attendees had the privilege of gaining insights into the

critical aspects of finding and training talented business assistants, as well as strategies for establishing a robust network and expanding business ventures globally.

The event provided a relaxed yet professional setting, allowing participants to connect with like-minded professionals. This occasion attracted entrepreneurs, business owners, and individuals eager to learn from the industry’s best.

CONNECT COMMUNITY

During the exclusive Connect Community meeting held on May 13, business coach Ekaterina Chegnova gave a talk, which focused on the art of launching projects from the ground up, all without the need for initial investments. Drawing from her personal experience with Star Talk, her language school, Ekaterina provided a captivating example to illustrate her insights. She shared practical strategies and success stories that showcased the possibilities of starting a venture with limited resources. The session left attendees feeling inspired and armed with the knowledge to embark on their own entrepreneurial journeys with confidence and creativity.



Moreover, Ekaterina Chegnova shared her experience and tips on business communication with foreigners. Together with the participants, they discussed intercultural communication and the importance of successful business communication.

TECHNOWOMEN



On June 22, our international conference on women's entrepreneurship, organized by TechnoWomen and NURCE, was a resounding success. Our esteemed speakers delved into engaging discussions on e-commerce and ESG for business, providing invaluable insights and strategies. Aziza Shuzheyeva, the leader of TechnoWomen, delivered a powerful speech on the mission of TechnoWomen, an international community that has united women from CIS countries.

In addition, we were thrilled to have professors from Nazarbayev University share their expertise on the latest trends in entrepreneurship. Their enlightening speech on navigating gender dynamics shed light on the challenges and opportunities faced by women in the business world.

The conference proved to be a perfect blend of inspiring stories, research findings, and current trends, leaving attendees motivated and empowered. We are grateful to all those who participated and made this event a resounding success.

BUSINESS MASTER-MIND

On June 29th, we held an insightful event focused on the steps to exit the operating system for owners and managers. Renowned entrepreneur and business consultant, Katya Boss, shared her extensive experience in business processes, financial models, team building, and anti-crisis strategies. With over 17 years of leadership expertise, including roles at Uwill, Mercedes-Benz RUS, Audi Motorhome, and Haval Rus, Katya's insights provided valuable guidance to attendees.



As a consultant for the international community Uwill and a team-building consultant for Mercedes-Benz RUS, she has consistently demonstrated her proficiency in driving organizational success. With her previous roles as the Managing Director of Audi Motorhome and Customer Experience Consultant at Haval Rus, Katya's diverse experience added tremendous value to the event. We extend our gratitude to Katya Boss for sharing her knowledge and expertise, making this event a resounding success.

CONFERENCE ON LEADERSHIP IN ELT



We are honored to announce that our esteemed team member, Ekaterina Chegnova, recently attended the 6th Annual Conference for Teachers and Heads of Language Schools in St. Petersburg, Russia. Her presence at the conference provided a valuable opportunity to exchange ideas, share experiences, and gain insights from renowned experts in the field.

ORATOR-FEST



We are delighted to announce the successful completion of Oratorfest, our monthly festival dedicated to the development of speech skills. The event took place on May 27 and on June 24 at Nazarbayev University in Astana. Participants had the unique opportunity to immerse themselves in a full day of engaging trainings led by experienced trainers, covering various aspects of speech. The festival was a resounding success, allowing attendees to enhance their oratory skills and discover new horizons in communication. We extend our heartfelt gratitude to everyone who joined us and made Oratorfest an unforgettable experience.

On July 29 from 13:00 to 18:30, we invite you to Nazarbayev University in Astana.

Experience a range of dynamic workshops led by expert trainers, covering topics such as storytelling, feedback, project development, comedy improvisation, coaching, and acting. Don't miss this opportunity to enhance your speech skills and grow personally and professionally.

Time: 29 July at 13:00

Place: Nazarbayev University, Block C3

Click [here](#) to register for the event.

NETWORKING SESSION



Join Ekaterina Chegnova, a renowned business communications coach, mentor, and co-founder of Star Talk, for an exciting networking workshop! This event is suitable for anyone looking to progress, develop, and expand their useful contacts. At the workshop, we will:

- Analyze Small Talk skills
- Expand your network through participant interactions
- Learn effective follow-up techniques to achieve your goals

Time: 26 July at 18:00

Place: Nazarbayev University, Block C3

Click [here](#) to register for the event.

NURCE CONFERENCE

We are delighted to announce the upcoming *II International Conference on Entrepreneurship, Innovation, and Technology: Challenges, Opportunities, and Prospects in the CIS Region*. Taking place on December 1, 2023, this conference will focus on the following:

- Family business and entrepreneurship in the CIS region
- Female entrepreneurship
- Entrepreneurial learning and education
- Entrepreneurship among historically marginalized groups, such as disabled individuals and communities, and refugees
- Technological Entrepreneurship and Innovation: Seeking Business Opportunities
Entrepreneurship and technology incubation
- Entrepreneurial networking in formal/incubator and informal/familial settings
- Business model innovation Institutional and policy entrepreneurship

This event provides a platform for exchanging ideas, sharing experiences, and discussing best practices in entrepreneurship, innovation, and technology. Join us to explore the prospects and potential of the CIS region in the global economy, foster a vibrant entrepreneurial ecosystem, and contribute to sustainable economic development.

WOMEN ENTREPRENEURSHIP PROGRAM



The university committee has officially approved the women's entrepreneurship training program. The training sessions have been scheduled to take place from November 24 to 30, 2023. The training program will span two cities, with 3 days allocated for Almaty (November 24-26) and another 3 days for Astana (November 28-30).

More than 50 to 60 individuals are expected to participate in the training. In preparation for the training, a draft for a banner promoting the event is currently being developed, to serve as a visual representation to attract potential participants.

BOOK ON KAZAKHSTAN WOMEN ENTREPRENEURS



We are happy to share with you the exciting progress of a new book project by NURCE titled «*Trailblazers of the Steppe: Inspiring Narratives of Kazakh Women Entrepreneurs*». This book aims to celebrate the remarkable achievements and stories of 50 outstanding Kazakh women entrepreneurs, shedding light on their invaluable contributions to various industries and their inspiring journeys of success. With a focus on empowering narratives, «*Trailblazers of the Steppe*» will be divided into ten captivating sections, each highlighting a unique aspect of the entrepreneurial landscape in Kazakhstan:

Section 1 - The Powerful Circle of Sisterhood: Bonds That Ignite Brilliance

Section 2 - Redefining Possibilities: Disabled Entrepreneurs Pioneering Change in Kazakhstan

Section 3 - Decolonizing Entrepreneurship: Embracing Roots and Nomadic Culture for Sustainable Transformation

Section 4 - Empowered Innovators: Women Entrepreneurs Leading the Circular Economy Revolution

Section 5 - Shattering Stereotypes - Women Entrepreneurs Thriving in Male-Dominated Sectors

Section 6 - Creative Changemakers: Women Entrepreneurs leading Kazakhstan's Contemporary Cultural Landscape

Section 7 - Tech Trailblazers: Women Entrepreneurs Redefining Kazakhstan's Digital Landscape

Section 8 - Agents of Change: Women Entrepreneurs Driving Social Impact in Kazakhstan

Section 9 - Building Bridges of Empowerment: Women Entrepreneurs Transforming Communities

Section 10 - Championing Financial Empowerment: Women Entrepreneurs Reshaping Finance in Kazakhstan

JOURNAL SPOTLIGHT

NURCE is thrilled to announce that a paper authored by our team members, Wojdan Omran and Shumaila Yousafzai, has been successfully accepted by the prestigious journal, *Entrepreneurship Theory and Practice (ETP)*.

Title: «Epistemic Injustice and Epistemic Resistance: Unveiling the Intersectional Study of Women's Entrepreneurship under Occupation and Patriarchy»

Abstract: In the face of distinct challenges encountered by women in their entrepreneurial pursuits, this study delves into the theories of epistemic injustice and intersectionality. Through a comprehensive analysis, we explore the overlapping impacts of various identity categories that intersect with gender within the context of oppressive power structures formed by occupation and patriarchy. Our findings shed light on how institutional oppressors perpetuate structural and normative discrimination, resulting in some Palestinian women entrepreneurs internalizing and accepting injustice, while others exhibit epistemic resistance by harnessing available resources.

Journal Information: *Entrepreneurship Theory and Practice (ETP)* is a renowned journal in the field of entrepreneurship, recognized for its four-decade legacy of rigorous peer-review and interdisciplinary approach. It attracts high-quality research from diverse disciplines, impacting academia, practitioners, and policymakers globally. With an impressive Impact Factor of 9.993 and a 5-Year Impact Factor of 14.105, ETP ranks among the top entrepreneurship journals, reflecting its scholarly influence. Furthermore, its inclusion in the prestigious FT50 ranking solidifies ETP's position as a leading outlet for entrepreneurship research.

A CASE STUDY OF ART-SHELTER BUNKER THEATRE



We are excited to announce that the article titled «*A Process Model of Combining Life Trauma and Life Passion into Cultural Entrepreneurship: A Case Study of Art-Shelter BUNKER Theatre*» authored by our team members Aljanova N., Yessekeyevs E., and Ernst Y. has been accepted for publication in the prestigious journal, *South Asian Journal of Business and Management Cases*, published by SAGE Publications Ltd.

This case study delves into the captivating journey of Art- Shelter Bunker theatre, tracing its origins to a transformative event—the founder’s dog bite. Through a narrative inquiry approach, we explore how this personal experience paved the way for the establishment of an extraordinary and influential theatre company. The study sheds light on the significance of trauma, resilience, and personal narratives in the creative process, providing deeper insights into the intricate relationship between life experiences, trauma, and artistic expression.

THE EVOLUTION OF E-COMMERCE IN KAZAKHSTAN: FROM EMERGING INDUSTRY TO DIGITAL FRONTIER

BY ZHANSAULE KIMEL



The evolution of e-commerce in Kazakhstan has been a remarkable journey, transforming the country from an emerging industry to a digital frontier. Over the years, Kazakhstan has witnessed a significant shift in consumer behavior, with more people embracing online shopping and digital transactions. The advancements in internet infrastructure, coupled with increased smartphone use, have played a crucial role in driving the growth of e-commerce. The rise of online shopping in Kazakhstan has provided consumers with the convenience of browsing a wide range of products and services from home. This shift has not only expanded choices for shoppers but also created opportunities for businesses to reach a larger customer base. Local entrepreneurs swiftly adapted, establishing strong online presences, while the government implemented supportive policies to enhance digital infrastructure and cybersecurity. These efforts have positioned Kazakhstan as a digital frontrunner in the region, enabling businesses to tap into untapped markets and driving economic growth.

Click [here](#) for the full text.

MEDIA



NURCE is proud to showcase its recent media coverage, which has garnered attention in the industry.

The first article on DKN is titled *Development of Women’s Entrepreneurship in Kazakhstan: Challenges and Opportunities*, written by Dr. Nurlykhan Aljanova. This article summarizes that state-sponsored Entrepreneurship Education programs in Kazakhstan must be updated and

made more efficient. Particular attention should be paid to developing youth women’s entrepreneurship and orienting it toward creating new products in new niches of the post-industrial economy market.

To access the full text click [here](#).

The second article is written in Russian and it shares NURCE’s values and plans, some of which are to develop strong external links with regional, national and international research enterprises in universities, economic development services, business and other networks.

To access the full text click [here](#).

NURCE TEAM: INTERVIEW



Nurlan Kulbatyrov started his career in 2009 at the Institute of Economic Research JSC under the Ministry of National Economy of the Republic of Kazakhstan, where Nurlan worked as a senior expert at the Center for Economic Development Planning. Currently, Nurlan works as the Deputy General Director of the Joint-stock company «Center for the Development of Trade Policy «QazTrade» under the Ministry of Trade and Integration of the Republic of Kazakhstan. Nurlan shares that prior to joining NURCE, he worked closely with the Nazarbayev University Graduate School of Business (NU GSB) in 2014.

He was honored to become a member of the national team «Global Entrepreneurship Monitor» based at Nazarbayev University. As part of their cooperation, they submitted the first application for Kazakhstan’s participation in the Global Entrepreneurship Monitor report and submitted the first national report the following year. Nurlan highlights that Kazakhstan was the first country in the Central Asian region to be included in this global entrepreneurship study. He emphasizes that the report is considered a reliable resource by international organizations such as the United Nations, the World Economic Forum, the World Bank, and the OECD.

At NURCE Nurlan is conducting a study on the ecosystem of SME support in Kazakhstan together with Professor Shumaila. «*We have compiled a portrait of Kazakhstan’s SMEs, where the main focus group were women entrepreneurs working in the male dominated industries*», shares Nurlan. Nurlan also mentioned that he likes that with qualitative research, the focus is on communicating with people, and describing their stories. He concludes: «*To be honest, one of the interesting aspects of my work is getting to know new people, where each person’s story turns into narratives*».

NEW ROLE, NEW RESPONSIBILITIES



In addition to Dr. Nurlykhan Aljanova’s role as a research fellow, she has recently taken on the position of Deputy Director. This new role involves contributing to public engagement efforts, such as writing blog posts and preparing material for the centre’s website. She also engages with the media to increase coverage of the centre’s activities. Dr. Aljanova presents papers and reports at project team meetings, conferences, and public meetings, and I lead seminars to share our research findings. She assist in planning and organizing workshops, conferences, and other events related to the NURCE’s activities, including business networking events, book launches, and photo exhibitions.

«*NURCE strives to become a leading center of research excellence in the field of entrepreneurship. We aim to establish strong partnerships with regional, national, and international research enterprises in universities, businesses, and other networks, and I enjoy being a part of this*», shared Dr. Aljanova.

Moreover, Dr. Aljanova shared about the upcoming event she is currently working on. This event is dedicated to increasing the participation of girls and women in technology industries, promoting women entrepreneurship, and empowering progressive women in Central Asia. This event will be led by Aziza Shuzheyeva, the CEO of Techno Women, a non-profit organization that brings together women working in various technology industries.

PROPOSAL FOR THE JOURNEY AHEAD



«I started at NU as a Professor of Sociocultural Anthropology in January 2023. Already soon after, I got in touch with NURCE because of my long-standing fascination for how entrepreneurs across Central Asia shape livelihoods and adjust to a rapidly changing environment. In my previous research, I followed Kyrgyz bazaar traders in Novosibirsk, Kyrgyz middlemen in Guangzhou and entrepreneurs in Kyrgyzstan's agriculture and manufacturing sectors. Coming to NU, I was excited to continue learning about the everyday evolution of capitalism in Central Asia through the eyes of active businesswomen and -men. Latest during my second encounter with the NURCE team, a joint lunch to celebrate International Women's Day, I was convinced to have found an inspiring, new intellectual home. Not only did I sense an encouraging collaborative spirit, but also an eagerness to capture practical aspects of entrepreneurship beyond disciplinary boundaries. And this trait of NURCE just marvelously aligns with two priorities that I have pursued for some time, as a scholar and consultant. First, to refine an ethnological perspective with theories, methodologies and experiences that originate from other academic traditions; and second, to explore the potential of such adjusted ethnological perspective to also be considered valuable in the field of applied research, such as impact evaluation or policy advise. Apparently, the attraction was mutual. I was delighted to get invited as a contributor to NURCE's research workshop on 'narrative approaches' in early April.» shares Professor Philipp Schröder.

In his new role as a Deputy Director, Professor Philipp proposes an approach that features an academic and an applied component to improve that track record. He is currently comparing entrepreneurship in Kazakhstan and Uzbekistan with a mixed methods-design that leads him from in-depth case studies to a quantitative survey.

INTERVIEW WITH A TEAM MEMBER



Nurlyaiym Zhaksybayeva, a dedicated public policy researcher, was recently awarded with the prestigious Chevening scholarship to pursue her studies at the London School of Economics (LSE). She shared her experience working with NURCE and how the center impacted her future. She joined NURCE in January of 2023 and undertook a comprehensive examination of circular economy opportunities in Kazakhstan. By exploring this area, Nurlyaiym aimed to contribute to the understanding and advancement of sustainable business models that promote economic growth while minimizing environmental impact.

«Despite experiencing deep grief after the loss of my mother, I found it challenging to regain my drive and passion for my career. However, through personal growth and introspection, I discovered a newfound resilience that has empowered me to assume leadership roles and dedicate myself to serving humanity through research, with the ultimate aspiration of achieving the Nobel Prize», added Nurlyaiym.

«Working at NURCE has played a pivotal role in my academic journey, enabling me to recognize significant issues within the field and develop invaluable skills that ultimately bolstered my application for the scholarship and acceptance into the esteemed LSE program. Through my involvement in research projects at NURCE, I have gained firsthand experience in identifying key challenges and exploring potential solutions in the domains of circular economy and entrepreneurship. This practical engagement has not only expanded my knowledge base but has also equipped me with essential research skills and methodologies», says Nurlyaiym.



Graduate School of Education News

THE FIRST MA STUDENT SYMPOSIUM

Graduate School of Education is pleased to announce the very first Multilingual Education Student Symposium in Kazakhstan that will take place on September 30. This symposium aims to shed light on the dynamic landscape of trilingual education research in the country and uncover valuable insights for future research endeavors.

The Symposium aims to capture not only the challenges but also the strengths and opportunities within this domain. It serves as a platform to explore the following research question: What are the dominant topics in student trilingual education research across Kazakhstan, and what does it suggest for future trilingual education research projects?

STEERING COMMITTEE OF THE FIRST MULTILINGUAL EDUCATION STUDENT SYMPOSIUM (MLESS)

Discover the students and alumni behind the event

CONTACT US

 @mless_2023

 MLESS@nu.edu.kz

 <https://sites.google.com/nu.edu.kz/mless/about>



ASSEL SADYKOVA
Chair of the Committee,
MA alumna 2022,
Research Assistant (CARE)



**AIGERIM
PAZYLBEKOVA**
Vice-Chair of the Committee,
MA 1 student



ZHANEL ZAKIROVA
MA 1 student,
Correspondence
specialist of the Team



**MALIKA
ZHELDYBAYEVA**
MA Alumna 2022,
Research Assistant



**AIGERIM
KUTTUBAYEVA**
MA alumna 2022,
Manager for Academic and
Student Affairs, SEDS



**ZHANERKE
KAMILAT**
MA 1 student,
Social Media Manager
of the Team



MARIYA SHORMAN
MA 1 Student,
Social Media Manager
of the Team



**AIGERIM
KAZHIGALIYEVA**
NU PhD Student in
Education, TA

The symposium will bring together passionate students, educators, researchers, and policymakers who are actively engaged in trilingual and multilingual research in education and beyond. Participants will have the opportunity to present their research findings, exchange ideas, and engage in fruitful discussions about the current state and future directions of trilingual education in Kazakhstan. By showcasing the ongoing research efforts, the symposium aims to create a collaborative environment that encourages interdisciplinary dialogue and the exploration of innovative approaches. It is a unique occasion to foster connections and inspire new research projects that can contribute to the enhancement of trilingual education practices in Kazakhstan.

The event is organized by the joint efforts of current and alumni students and supported by the Faculty of the Multilingual Education program. Thanks to the well-coordinated work of the team, a call for abstracts was widely disseminated across Kazakhstan and abstracts were received from students of different universities. Nazarbayev University is dedicated to building mutually supportive networks with Kazakhstani universities and sharing the experience with students from other universities. Therefore, as part of pre-symposium events aimed at capacity building for Kazakhstani students, a workshop entitled «Writing an Effective Abstract» was conducted by the esteemed faculty of the Graduate School of Education Dr. Jeremy Spring on June 6. The workshop was organized to assist students in preparing abstracts and provide them with valuable recommendations from a faculty member. The follow-up workshop delivered by a faculty member during the Symposium will equip students with skills required for presenting at conferences with a post-symposium workshop focusing on turning a presentation into a publication. As a result, Kazakhstani students from other universities will be sharing in the NU experience where they gain valuable insights and research skills that will contribute greatly to their development as future scholars.

Moreover, as part of the Symposium's commitment for capacity building, the students engaged in the work of the Steering Committee have an opportunity to enhance the most in-demand workplace skills such as designing websites, managing social media accounts, creating marketing content, and event planning. In addition, they put their research skills into practice by evaluating and reviewing abstracts, synthesizing dominant themes emerging from the abstracts for the conference.

We are fortunate to have Kazakhstani well-established leaders and scholars in the field of education such as Dr Laura Karabassova and Prof Juldyz Smagulova who have so graciously agreed to be the keynote speakers to encourage the next generation of Kazakhstani scholars on their path of academic research.

This initiative would not be possible without the support from the Graduate School of Education, the Dean Dr Aida Sagintayeva and the vice-deans Prof Tsediso Michael Makoelle and Dr Jason Sparks.

We cordially invite all students, researchers, and educators interested in trilingual education to join us for this enlightening symposium. Together, let us unravel the dominant research topics, identify emerging trends, and pave the way for future investigations that will shape the landscape of trilingual education in Kazakhstan.

Save the date and stay tuned for further details on the symposium agenda, and registration process. We look forward to your active participation and meaningful contributions to this significant event.

For all questions please contact Assel Sadykova (a.sadykova@nu.edu.kz), the Chair of the Steering Committee or the team (MLESS@nu.edu.kz).

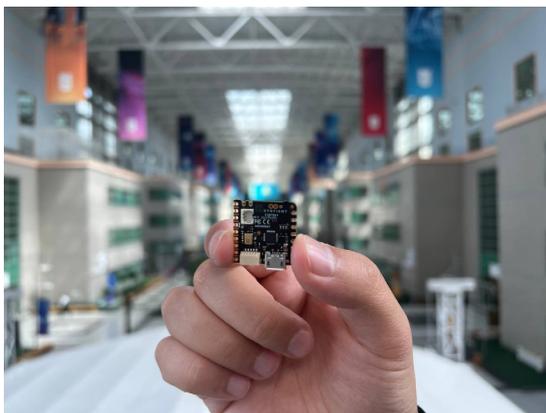
For more details, you can visit the Instagram account [@mless_2023](#) or the [website](#).

SPEECH COMMAND RECOGNITION



The goal of Speech Command Recognition (SCR) is to detect a particular set of predefined words or phrases from a speech signal and to trigger a specific response or action based on the identified keyword. Since SCR requires less demanding hardware compared to general-purpose speech recognition, SCR can run on edge devices and embedded systems with low power consumption. SCR is widely used in applications such as voice-controlled smart home devices, personal digital assistants, robotics, IoT, and industrial automation. Additionally, it can be used in security

and surveillance systems to detect specific trigger words that alert law enforcement or security personnel of potential threats. Most of the SCR systems were developed for the English language due to the large-scale Google Speech Commands Dataset (GSCD). This dataset is available in two versions, V1 (30 keywords) and V2 (35 keywords) and provides a wide range of English keyword recordings.



To bolster these technologies in the Kazakh language, we have developed the Kazakh Speech Commands Dataset (KSCD). The dataset consists of 35 keywords translated from the GSCD-V2. The Kazakh keywords are as follows: «артқа», «алға», «оңға», «солға», «төмен», «жоғары», «жүр», «тоқта», «қос», «өшір», «иә», «жоқ», «үйрен», «орында», «нөл», «бір», «екі», «үш», «төрт», «бес», «алты», «жеті», «сегіз», «тоғыз», «оқы», «жаз», «төсек», «құс», «мысық», «ит», «бақытты», «үй», «ағаш», «көрнекі», «мәссаған». The recordings are 1-second

duration and in a WAV format with a sampling rate of 16 kHz. In total, 119 participants (62 males, 57 females) participated in data collection via a telegram bot. The collected dataset underwent a manual evaluation by moderators to remove any subpar samples, including incomplete or incorrect readings, as well as quiet or silent recordings. The final dataset contains 3,623 recordings. You can still contribute to the development of SCR systems for the Kazakh language by participating in data collection via the [telegram bot](#).

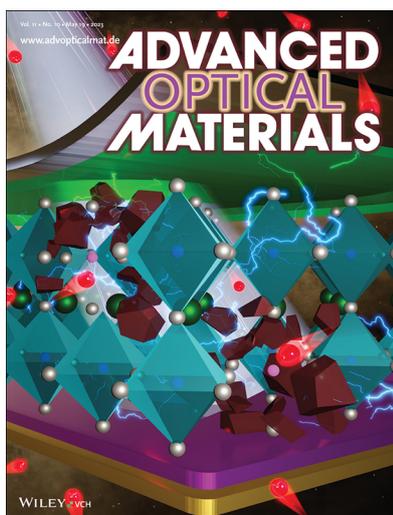
To validate the efficacy of KSCD, we trained and evaluated a state-of-the-art SCR model - [Keyword-MLP](#). The model achieved 97% accuracy on the test set. We have made the dataset, source code, and pretrained models publicly available at our [GitHub repository](#).

Also, we created comprehensive tutorials about the project. The videos are available on our YouTube channel. Also, we recommend reading our paper, [“Speech Command Recognition: Text-to-Speech and Speech Corpus Scraping Are All You Need”](#), for more detailed information. In addition, we trained a tiny model (538.25 KB) on Edge Impulse and deployed it on the Arduino Nicla Voice (shown in photos) which is one of the most advanced TinyML development boards available on the market. The Arduino Nicla Voice development board incorporates cutting-edge features, including a high-performance microphone, an IMU (Inertial Measurement Unit), a Cortex-M4 Nordic nRF52832 MCU (Microcontroller Unit), and the Syntiant NDP120 Neural Decision Processor. For more information, please read our comprehensive tutorial, [“Small-Footprint Keyword Spotting for Low-Resource Languages”](#) on Hackster.



School of Sciences and Humanities News

NU PHYSICISTS DEVELOP NOVEL RADIATION-RESISTANT AND HIGH-PERFORMANCE PEROVSKITE PHOTODIODES



A group of physicists led by Prof. Viktor Brus in collaboration with the group of Prof. Annie Ng and Dr. Marat Kaikanov proposed a novel high-performance and extreme radiation-resistant perovskite photodiode as part of their research project launched in January 2022 with a grant from Nazarbayev University.

The contribution unravels the impact of pulsed (150 ns) 170 keV proton irradiation with different accumulated fluences on high-performance multicomponent $\text{Cs}_{0.04}\text{R}_{b0.04}(\text{FA}_{0.65}\text{MA}_{0.35})_{0.92}\text{Pb}(\text{I}_{0.85}\text{Br}_{0.14}\text{Cl}_{0.01})_3$ perovskite photodiodes via a comprehensive study and comparison of all photodiode characteristics of the as-prepared and irradiated devices. The multi-component hybrid perovskite used in our study is a state-of-the-art perovskite photoactive material.

The results of the study showcased the exceptional durability of the perovskite photodiodes, which continued to exhibit superior efficiency and stability even after exposure to extremely high levels of radiation. The researchers also observed minimal degradation in the devices' parameters, indicating their potential for application in radiation-intensive environments.

The advanced radiation resistance of photodiodes was experimentally tested employing the NU pulse high-current ion accelerator i-NURA.

i-NURA generates so-called Intense Pulsed Ion Beam (IPIB). IPIBs are widely used for annealing of the near-surface layer of bulk materials. But i-NURA was adjusted for modification of nanomaterials, including investigation of radiation tolerance of modern thin-film semiconductor devices. It is worth to notice, that the pulsed power of the beam is more than 100 MW, while the total power consumption of i-NURA accelerator is just about 10 kW. Another important feature of i-NURA accelerator is the absence of any kind of radiation outside the vacuum chamber where the samples are placed.

The research results have been recently published in a prestigious international journal [Advanced Optical Materials](#) and highlighted on the journal's [cover image](#).

Scientists will continue working on improving their perovskite optoelectronics concept utilizing a series of different types of novel semiconductor materials and device structures for developing next-generation radiation-resistant optoelectronic and photovoltaic devices.

HOW ARE AUTOENCODERS RELATED TO MANIFOLDS?

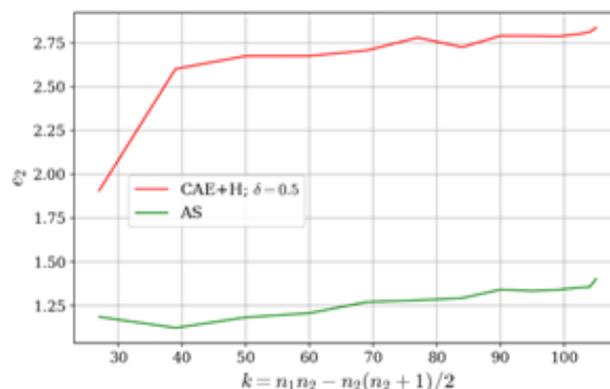
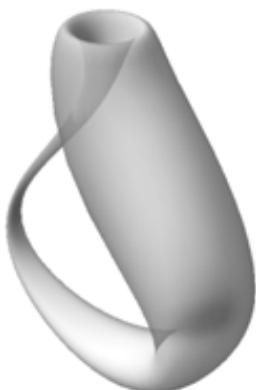
A paper entitled “Autoencoders for a manifold learning problem with a jacobian rank constraint” by the Assistant professor Rustem Takhanov, the PhD candidate Sultan Abylkairov, the RA Maxat Tezekbayev was accepted to the prestigious journal Pattern Recognition (93% percentile). The link to the paper can be found [here](#).

Autoencoder is a data science tool that was developed in 1991 by Mark Kramer to generalize classical Principal Components Analysis (PCA). An idea of an autoencoder is to treat any unsupervised dataset of points $x_1, \dots, x_N \in \mathbb{R}^n$ as a supervised set of pairs $(x_1, x_1), \dots, (x_N, x_N)$, and feed the latter dataset to a neural network (which is called an autoencoder) whose architecture is chosen as a superposition of the so-called encoder $e: \mathbb{R}^n \rightarrow \mathbb{R}^d$ and a decoder $d: \mathbb{R}^d \rightarrow \mathbb{R}^n$, where the dimension of the so-called code space, or hidden space, is $d < n$. After training of the network we obtain an encoder mapping that compresses an input vector into a low-dimensional representation vector, and a decoder mapping that recovers the input from its low-dimensional representation.

Most works in this area of machine learning seek for methods to obtain representations with some desirable properties, such as representations with nearly independent features, or representations in some exotic spaces, such as hyperbolic spaces or Stiefel manifolds. Our work deals with another aspect of the autoencoder, namely a relationship between the autoencoder mapping and a low-dimensional manifold onto which that mapping projects input points. We first prove that the autoencoder’s image set is a d -dimensional smooth manifold immersed in \mathbb{R}^n . This is guaranteed by the architecture itself. Moreover, beyond guaranteed low-dimensionality of the image set, the autoencoder’s image set can be aligned along a smooth submanifold with even smaller dimensionality than d , if we specifically regularize a training loss function of the autoencoder by a certain term, namely a rank-reducing term applied to the Jacobian of the autoencoder.

Developed mathematical methods can be applied to the following practical tasks: nonlinear dimensionality reduction, outlier detection, image representation, and many other applications in statistics, computer vision and natural language processing.

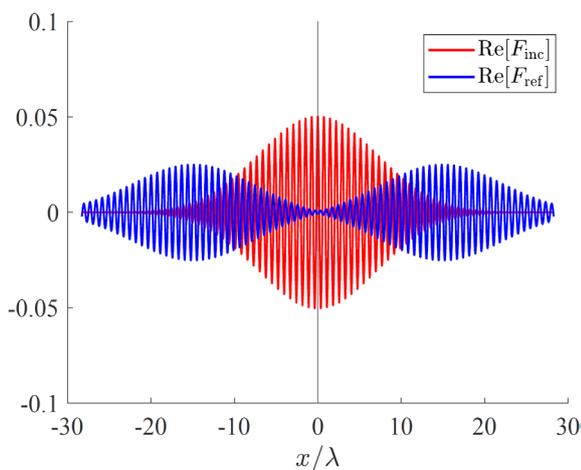
Below one can see a comparison of RMSE errors on a task of recovering a Stiefel manifold by the classical algorithm (CAE+H) and the training algorithm with a rank-reducing term (AS).



First plot: a 2-dimensional manifold immersed in \mathbb{R}^3 , second plot: AS vs CAE+H

PUBLICATION IN TOP JOURNAL BY NU PHYSICS STUDENT

Advancing the frontiers of optical processing: a scientific letter based on the findings of the [Metamaterials Modeling and Design Group](#) unveils novel applications of a century-old setup. Written by NU Physics student Sanat Shukurov and Prof. Constantinos Valagiannopoulos, the letter titled “Ultra-Sharp Angular Filtering of Far-Field Signals with Graded-Index Multilayers” describes how a widely known structure consisting of dielectric multilayers with progressively smaller permittivities can be used for power splitting, spatial DC isolation, beam shifting, and low-profile energy interaction. Such properties are extremely useful in a wide range of fields including signal processing, angular switching, directional sensing, and many others. The outstanding versatility and utility of the studied multilayered structure have been recognized by the experts working in the field of photonics as the letter has been accepted for publication in a prestigious (Scopus top 9%) scientific journal IEEE Transactions on Antennas and Propagation. The related link [here](#).



The peak present in the wavefront of the input signal (red) physically splits when reflected (blue) from the multilayers



Sanat and Prof. Valagiannopoulos after this rare publication success

Interestingly, the principle underlying the aforementioned properties of the multilayers is the total internal reflection phenomena - something that students learn in high school physics classes! This phenomenon allows the separation of the incoming signal into the low- and high-frequency parts. Consequently, the input wave can be “cleaned” off the low-frequency pollutions allowing for power splitting and DC isolation. Moreover, even when the input consists purely of high-frequency waves and nothing is filtered out, the spatial distribution of the energy carried by the signal still undergoes alteration allowing for beam shifting and directionally enhancement. Notably, the ultra-sharp separation is achieved by smoothing out the textural transition between the incidence and transmission media by stacking the layers of materials with gradually decreasing permittivity between the two media. This simple technique can be utilized to improve the low-profile energy interactions between the components located in different media.

In the future, the Metamaterials Modeling and Design Group aims to improve upon the findings by incorporating the metamaterials and using AI-based methods to further enhance the filtering properties of the multilayered structure. Additionally, the members of the group plan to examine in more detail the performance of the proposed design for phased arrays and other applications.



NAZARBAYEV
UNIVERSITY

LIBRARY

HOW THE NU LIBRARY'S NEW PLATFORM CAN HELP YOU WITH YOUR RESEARCH NEEDS

APRIL MANABAT AND MONIKA ANNA BUKOWSKA
REFERENCE OFFICE

In the Library's continuous effort to provide efficient and effective service to the academic community, the Library recently launched its new platform, [Primo](#). A first of its kind in Kazakhstan, Primo is a contemporary system that enhances the visibility of library collections and enables students and researchers to swiftly access scholarly resources. Its user-friendly interface enables individuals to explore the library's offerings from any location and discover new content with ease. Powered by Ex Libris, it is a discovery service for Alma, its integrated library system.



Primo offers a wide array of exciting features that aims to greatly enhance the user experience.

- *One-stop shop search.* A single integrated discovery/search interface that allows users to explore the library collection regardless of format.
- *In-depth and powerful searching.* With this new interface and functionalities, it enables users to search across all formats and collections. It also allows users to retrieve more relevant search results by setting more limits and facets and employing advanced searching for a specific or multidisciplinary topic.
- *Improved user experience.* Alongside in-depth and powerful search functionalities, users can import ready citations as well as save their searches and manage their accounts, among others.

Primo helps users to find reliable and relevant books and articles for their research and scholarly needs. An excellent starting point for your research, Primo is indeed a great help. To learn more about Primo, you can visit the [Primo Quick Start Guide](#) or get help through [AskNURIA](#) service.

NEW RESEARCH STUDIES PUBLISHED

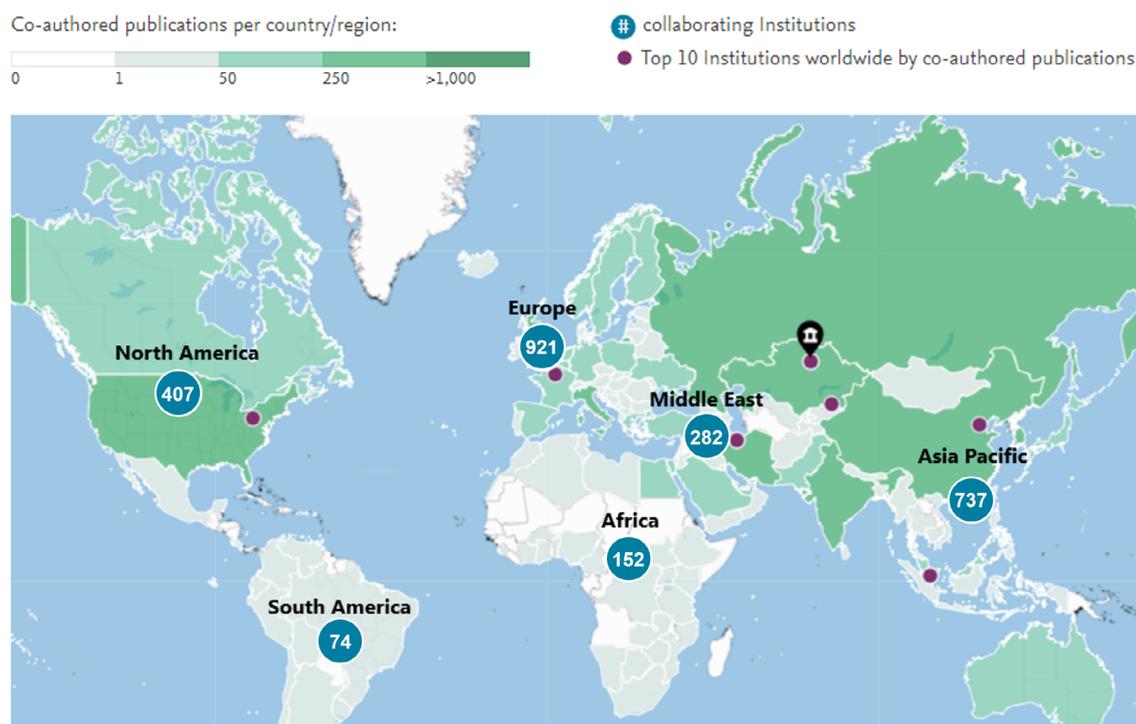
Book Chapter

Manabat, A. R., Arystanova, L., Ussenova, G., & Andryukov, A. (2023). Keeping Close from a Distance: The Nazarbayev University Library's Contactless Curbside and Book Delivery Services Amidst the Pandemic. In *Handbook of Research on Advancements of Contactless Technology and Service Innovation in Library and Information Science* (pp. 101-127). IGI Global.

Journal Article (Scopus-indexed)

Manabat, A. R. (2022). [How's our library e-service? Measuring user satisfaction in the virtual environment](#). In *University Library at a New Stage of Social Communications Development. Conference Proceedings* (No. 7, pp. 110-126).

RESEARCH PUBLICATIONS PERFORMANCE



In this issue, we are delighted to present you an overview of research activities conducted under the auspices of Nazarbayev University. Since its inception in 2011, Nazarbayev University faculty members and researchers have released 7,445 peer-reviewed publications indexed by Scopus, and have been cited 77,621 times for 2011-2023 period (SciVal, July 14, 2023). The approximate number of citations per peer-reviewed publication is 10. The overall H-index of NU is 90, whereas H5- index is 53. The field-weighted citation impact is 1.28, meaning that our publications have been cited 28% more than would be expected based on the world average for similar publications. The map above demonstrates the collaboration between NU and other institutions across the

globe based on co-authored publications over the period from 2011 to 2023. There are 5,032 NU research papers published in collaboration with international institutions, which accounts for 67.6% of the total number of publications produced by our University with the overall Field-Weighted Citation Impact of 1.79 (as of July 14, 2023). For getting more comprehensive information on the research performance at NU, please have a look at the following [presentation](#) prepared using SciVal research evaluation platform. If you have any questions regarding the provided information, please contact Saule Sadykova (ssadykova@nu.edu.kz)

FUNDING OPPORTUNITIES

#	Opportunity	Funder	Deadline	Source link
1	Duchenne Muscular Dystrophy Research Program Idea Development Award	Department of Defense Defense Health Program	8/2/2023	URL
2	Department of Defense Defense Health Program	Department of Defense Defense Health Program	8/15/2023	URL
3	Green hydrogen	Merck group	8/31/2023	URL
4	Imaging Research in Alzheimer's and Other Neurodegenerative Diseases	Alzheimer's Association	9/7/2023	URL
5	ESCMID research grants 2024	ESCMID	9/13/2023	URL
6	2023 Summer Pilot Award – Request for Applications	The mission of the Simons Foundation Autism Research Initiative (SFARI)	9/14/2023	URL
7	Pancreatic Cancer Research Program	Department of Defense Defense Health Program	9/14/2023	URL
8	Kidney Cancer Research Program Academy of Kidney Cancer Investigators – Early-Career Scholar Award	Academy of Kidney Cancer	9/15/2023	URL
9	Kidney Cancer Research Program Idea Development Award	Academy of Kidney Cancer	9/15/2023	URL
10	ERC Proof of Concept Grant (ERC-2023-POC)	ERC Horizon Europe Framework Programme	9/21/2023	URL
11	ROLE OF GUT MICROBIOTA IN THE MECHANISMS OF PAIN	The Biocodex Microbiota Foundation	11/30/2023	URL
12	American Tinnitus Association's grant program	The American Tinnitus Association	rolling basis	URL
13	Research Grants and Support	Nestlé Foundation	rolling basis	URL
14	Carl Zeiss Humboldt Research Award	the Humboldt Foundation	rolling basis	URL
15	Fraunhofer-Bessel Research Award	the Humboldt Foundation	rolling basis	URL
16	Friedrich Wilhelm Bessel Research Award	the Humboldt Foundation	rolling basis	URL
17	Clean Energy Accelerator	Amazon	rolling basis	URL
18	Project Grants	The Myrovlytis Trust	rolling basis	URL
19	Small/ Pilot Studies	The Myrovlytis Trust	rolling basis	URL
20	Energy Foundation's grants	Energy Foundation China	rolling basis	URL
21	Impact Collaboration Programme (ICP 2023)	The Geneva Science-Policy Interface	rolling basis	URL
22	Research Core Award: Non-rodent Large Animal Model for Inherited Retinal Disease (worldwide)	Foundation Fighting Blindness	rolling basis	URL

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