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ZAMONAVIY TA'LIMDA ISLOHOTLAR VA TEXNIK TAFAKKUR

ilmiy jurnali

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“ZAMONAVIY TA'LIMDA ISLOHOTLAR VA TEXNIK TAFAKKUR”

ilmiy jurnali

Mazkur ilmiy to'plamda “Zamonaviy ta'limda islohotlar va texnik tafakkur” ilmiy jurnaliga taqdim etilgan ilmiy maqolalar, tezislar hamda ilmiy-tadqiqot natijalari o'rin olgan. Jurnal zamonaviy ta'lim tizimini rivojlantirish, ta'lim jarayoniga innovatsion pedagogik va axborot texnologiyalarini joriy etish, ta'lim mazmuni va metodlarini takomillashtirish, shuningdek, pedagogika, texnika va muhandislik yo'nalishlarining o'zaro integratsiyasini rivojlantirishga qaratilgan ilmiy izlanishlarni yoritishga ixtisoslashgan.

Nashrda ta'lim va tarbiya jarayonining nazariy hamda amaliy masalalari, zamonaviy pedagogik texnologiyalar, raqamli va innovatsion ta'lim, muhandislik va texnik ta'limni rivojlantirish, fanlararo integratsiya, texnik tafakkurni shakllantirish, ta'lim jarayonini loyihalashtirish va takomillashtirish, shuningdek, mazkur sohalaridagi dolzarb ilmiy-metodik muammolarning yechimlariga bag'ishlangan tadqiqotlar o'rin oladi.

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MUNDARIJA

Atajanov Otajon Yuldoshevich, AMALIY TAJRIBALAR ASOSIDA TALABALARNING TAHLILIIY VA DIAGNOSTIK KO'NIKMALARINI SHAKLLANTIRISH METODIKASI	10
Tosheva Gulnora Djurayevna, DIZAYNERLIK QOBILIIYATI' TUSHUNCHASINING PEDAGOGIK-PSIXOLOGIK MAZMUNI, TUZILISHI VA FUNKSIONAL XUSUSIYATLARI	17
Sayidaxmedov Ravshan Rajabovich, TALABALARNING TADQIQOT KO'NIKMALARINI BAHOLASHNING MEZONLI-DIAGNOSTIK MODELII	25
Xudayberdiyev Erkin Umedovich, STANDARTLASHTIRISH VA METROLOGIK NAZORAT SOHASIDA HUQUQIY KOMPETENSIYALARNI SHAKLLANTIRISH PEDAGOGIK MUAMMO SIFATIDA	33
Qosimov Fazliddin Tolibovich, YARIMO'TKAZGICHLARNING ZAMONAVIY TEXNOLOGIYALARDAGI O'RNI VA RIVOJLANISH ISTIQBOLLARI.....	41
Bafoev Asliddin, Ahmadova Garanfil, Mavlonov Shohrukh, SYNTHESIS AND APPLICATION OF PET-DERIVED HYDROGEL ADSORBENTS FOR EFFICIENT TREATMENT OF DYE-CONTAMINATED WATER	46
Bafoev Asliddin, Ahmadova Garanfil, Mavlonov Shohrukh, SYNTHESIS AND APPLICATION OF PET-DERIVED HYDROGEL ADSORBENTS FOR EFFICIENT TREATMENT OF DYE-CONTAMINATED WATER	46
Umedova Ma'mura Nasillo qizi, SUN'IY INTELLEKT TEXNOLOGIYALARIDAN FOYDALANISH ORQALI O'QUVCHILARNING KREATIV TAFAKKURINI RIVOJLANTIRISH	60
Shukrulloeva M.B., RAQAMLI TA'LIM MUHITIDA IJTIMOIIY FAOLLIK VA KOMMUNIKATIV KOMPETENSIYALARNI RIVOJLANTIRISHNING XALQARO TAJRIBASI	66
Sharipov Q.Q., Bekov Bekzod Doniyorovich, QATLAM SUVI pH QIYMATINING GAZNI QAYTA ISHLASH ZAVODI APPARAT VA SIG'IMLARI KORROZIYASIGA TA'SIRI VA KOMPLEKS HIMOYA CHORALARI	83
Hamidova Nozima Sirojiddin qizi, Temirova Matlab Ibodovna, ISHLATILGAN O'SIMLIK YOG'LARINI KIMYOVIY QAYTA ISHLASH ASOSIDA QO'SHIMCHA QIYMATLI MAHSULOTLAR OLISH	93
Muzrabova Feruza Shuxrat qizi, INKLYUZIV SINFLARDA O'QUVCHILARNING IJTIMOIIY INTEGRATSIYASINI TA'MINLASHNING PEDAGOGIK MEXANIZMLARI	99
Sayfiddinov Javlon Bahriddin o'g'li, HUDUDIIY IQTISODIYOTNI RIVOJLANTIRISHDA YASHIL MOLIYALASHTIRISH VA INVESTITSIIYA MEXANIZMLARINI TAKOMILLASHTIRISH.....	108
Yuldashev G'ulomjon, Qosimov Bekzod Ulug'bek o'g'li, KARKIDON SUV OMBORI HAVZASI TUPROQLARINING LANDSHAFT-GEOKIMYOVIY KATENA MODELII VA ELEMENTLAR MIGRATSIYASI QONUNIYATLARI.....	114
Kamol Akbarov, 1928–1929-YILLARDA QASHQADARYO OKRUGIDA O'TKAZILGAN YER-SUV ISLOHOTI VA UNING AHOLINING IJTIMOIIY HAYOTIGA TA'SIRI	120
Mansurov D.U, Oydinova Z.R, BIOCHAGA (CHAGA, INONOTUS OBLIQUUS) SUVLI EKSTRAKTINING SICHQON KOLOREKTAL KARSINOMASI (CT26) VA FIBROBLAST (L929) HUJAYRA LINIYALARIGA IN VITRO SITOTOKSIK TA'SIRI	124
Shermatova Xurshida, HAYVONLAR VA HASHAROTLARDAGI AQLIIY QOBILIIYAT UYG'UNLIGI	131
Паноев Э.Р, Г.Д.Нурназарова., Салимов Х.О., ПРОИЗВОДСТВО БИТУМНОЙ МАСТИКИ НА ОСНОВЕ МЕСТНОГО СЫРЬЯ	136
I.R.Goziyev. Umaraliyev.N, TERMOLIZ VA PIROLIZ REJIMIDA ISHLAYDIGAN GAZ GENERATORINI AVTOMATIK BOSHQARISH UCHUN MIKROPROTSESSOR TIZIMINI YARATISH	143
To'xtaraliyev Sohijjon Murodjon o'g'li, Xolmatov D.S., FOSFORIT SHLAMIDAN KLINKER USULDA EKSTRAKSION FOSFAT KISLOTA OLISHDA SULFAT KISLOTASI ME'YORI VA KONSENTRATSIYASINING TA'SIRI	152
F.M.Karomov, H.Salimov, E.R.Panoyev, Sh.U.Axmedova, MAHALLIIY XOMASHYOLAR ASOSIDA YUQORI HARORATGA CHIDAMLI KORROZIYA INGIBITORINI SINTEZ QILISH VA TADQIQ ETISH.....	161
Temurxo'ja Alisher o'g'li Shodmanov, XORIJLIKLARGA O'ZBEK TILINI ONLAYN O'QITISHDA LINGVOMADANIY YONDASHUV VA RAQAMLI TEXNOLOGIYALAR	164
Maxkamov Ilhomjon Turdaliyevich, Aminjonova Mushtariyxon Sherzodbek qizi, ADAPTIV MOBIL TA'LIM ILOVALARINING TA'LIM SAMARADORLIGIGA TA'SIRINI BAHOLASH	168
Аминова Мохирахон Мўминжон қизи, НАУЧНО-ТЕХНОЛОГИЧЕСКИЕ ОСНОВЫ СОЗДАНИЯ СЕРОСОДЕРЖАЩИХ ПРЕПАРАТОВ ИЗ ПРОМЫШЛЕННЫХ ОТХОДОВ ДЛЯ ЗАЩИТЫ СЕЛЬСКОХОЗЯЙСТВЕННЫХ КУЛЬТУР	172
Dustova Gulnoza Ashurovna, TEXNIK OLIY TA'LIMDA FANLARARO INTEGRATSIYA TUSHUNCHASINING PEDAGOGIK MAZMUNI VA RIVOJLANTIRISH TENDENSIYALARI.....	178
Turdimurodova Ma'suma Mamarajab qizi, O'ZBEKISTONNING SHO'RLANGAN TUPROQLARIDA O'SADIGAN O'SIMLIKLARNING FIZIOLOGIK – BIOKIMYOVIY MOSLANISH MEXANIZMLARINI TADQIQ QILISH	183





Hasanov Hakimjon Xalil o'g'li, SHARQ MUTAFAKKIRLARI (FOROBIY, BERUNIY, IBN SINO) ASARLARIDAGI TA'LIMYIY G'OYALARNING PEDAGOGIK TAHLILI	191
Ergashev Asadbek Ulug'bek o'g'li, MEVA-SABZAVOTLARNI QAYTA ISHLAB CHIQRISHDA IKKILAMCHI RESURSLARDAN SAMARALI FOYDALANISH	199
Jo'rayeva Yoqutxon A'zamxo'ja qizi, BOLALARDA UZI-NAZORAT OSTIDA REGIONAR BLOKADALAR VA OPERATSIYADAN KEYINGI OG'RIQNI DAVOLASH	207
Sharipov Akbarshox Sanjarovich, NEFT-GAZ SOHASINING OBYEKTLARINI METROLOGIK NAZORAT QILISH USLUBIYOTI.....	215
Xakimova Zulfiyaxon Mehmonaliyevna, IJODIY ISH VA LOYIHA ISHI – TAFAKKURNI O'STIRISH VOSITASI	222
Shukurova Ozoda Odil qizi, KONSIGNATSIYA ASOSIDA SHAXSIY PLATFORMALARDA XIZMAT KO'RSATISH TARTIBI VA SHARTLARI.....	227
Xakimova Zulfiyaxon Mehmonaliyevna, IJODIY ISHLARNI TASHKIL ETISHDA PSIXOLOGIK VA PEDAGOGIK IMKONIYATLAR	232
Allayarova Nilufar Sherali qizi, TABIIY OFATLAR OQIBATLARINI BARTARAF ETISHNING RAQAMLI-MOLIYAVIY MEKANIZMLARI VA XALQARO TAJRIBA	236
Rasulov Inom Mo'ydinovich, Usmanova Gulnoza Xamdamonovna, RAQAMLI TA'LIM MUHITIDA TA'LIM TIZIMINI BOSHQARISHNING PEDAGOGIK-METODOLOGIK MUAMMOLARI VA MODELII	242
Nurullayev Mirxon Muhammadovich, AGENTLI SI TIZIMLARIDA AXBOROT OQIMLARINING UMUMLASHGAN SXEMASI VA MANBALARNING KO'P O'LCHOVLI ISHONCH PROFILI TASNIFI ..	245
A.Isashov, N.Yunusaliyev, SUV RESURSLARINI BOSHQARISH VA ULARDAN SAMARALI FOYDALANISH MUAMMOLARI.....	257
Yo'ldosheva Dilrabo Sobir qizi, OLIY TA'LIM JARAYONIDA TALABALARNING MUSTAQIL TA'LIM FAOLIYATINI RIVOJLANTIRISHNING PEDAGOGIK SHART-SHAROITLARI	260
Nurmurodova Yulduz Bazarovna, O'ZBEKISTONDA JOYLASHGAN TARIXIY MAHALLA MARKAZLARINI QAYTA QURISH TAMOYILLARINI ISHLAB CHIQISH	271
Ismailova Gulnoza Odiljon qizi, EDGAR ALLAN POE HAMDA WASHINGTON IRVING ASARLARI: XIX ASR AMERIKA ADABIYOTIDA SHARQ VA ISLOM OBRAZLARINING POETIK TRANSFORMATSIYASI	278
Xaydarov Sayfulloh Nodirjon o'g'li, KROSS YUGURISHDA CHIDAMLILIKNI OSHIRISH UCHUN INNOVATSION YONDASHUVLAR VA ULARNING SAMARADORLIGI	285
Aminova Mohiraxon Mo'minjon qizi, FROM INDUSTRIAL SULFUR RESIDUES TO RELIABLE CROP PROTECTION: FEEDSTOCK QUALIFICATION, FORMULATION CONSISTENCY AND FIELD VALIDATION.....	295
Khudaybergan Abdullayev, RING-TO-DROPLET TRANSITION IN A TWO-DIMENSIONAL DIPOLAR BOSE–EINSTEIN CONDENSATE: A GROUND-STATE SCAN WITH GPELAB.....	301
Xazratqulova Irodaxon Zokirjon qizi, ISHQORIY YER METALLARI MAVZUSINI O'QITISHDA ILG'OR TA'LIM TEXNOLOGIYALARIDAN FOYDALANISH.....	308
Шодиева Муаттар Салом кизи, ФОРМИРОВАНИЕ РУССКОЯЗЫЧНОГО ЛЕКСИКОНА У ДЕТЕЙ-БИЛИНГВОВ: МЕХАНИЗМЫ, ФАКТОРЫ И ПЕДАГОГИЧЕСКИЕ СТРАТЕГИИ.....	313
Ubaydova V.E., Abbosova M.O., TRANSFORMATSIYA ELEMENTLARINI QO'LLAB KIYIMLARINI LOYIHALASHNING O'ZIGA XOS QONUNIYATLARI	320
S.Z.Ibodullayeva, BO'LAJAK PEDAGOGLARNING KASBIY KOMPETENSIYALARINI RIVOJLANTIRISHNING PEDAGOGIK SHART SHAROITLARI.....	325
Xazratqulova Iroda Zokirjon qizi, Maxkamov Ravshan Raximovich, AROMATIK KARBON KISLOTALARINING SIRT FAOL HOSILALARINI SINTEZ QILISH, STRUKTURA-SPEKTRAL TAVSIFI VA KOLLOID-KIMYOVIY XOSSALARINI O'RGANISH.....	331
Qurbonov Elmurod Botiraliyevich, SADOQAT KONSEPTINING JAMIYAT VA SHAXS MUNOSABATLARIDAGI PRAGMATIK IFODASI (ODIL YOQUBOV ASALARI MISOLIDA)	335
Shukurova Ozoda Odil qizi, RAQAMLI PLATFORMALARNING XIZMAT KO'RSATISH SHARTNOMALARIDAGI FUQAROLIK-HUQUQIY MAQOMI: VOSITACHI YOKI SHARTNOMA TARAFI	339
Jo'rayeva Maxfuza Erkinovna, SIYOSIY DISKURSNING SUN'IY INTELLEKT (AI) YORDAMIDA TADQIQI	345
Yaminov Feruzjon Fayzullo o'g'li, XORIJIY NEFT-GAZ TA'LIMI TAJRIBASIDA KASBIY KOMPETENSIYALARNI RIVOJLANTIRISH MODELLARI VA ULARNI O'ZBEKISTON TA'LIM TIZIMIGA MOSLASHTIRISH IMKONIYATLARI	350
Shirinov Feruzbek Shuxratovich, Maxmudov Jamshid Shuxratovich, OLIY TA'LIM MUASSASALARIDA MAGISTRLIK DISSERTATSIYALARINI TAYYORLASH JARAYONINI RAQAMLASHTIRISHNING ZAMONAVIY YONDASHUVLARI.....	360





Qobilova Dildora Odilboyevna, METEOPARAMETRLAR DINAMIKASI VA MURAKKAB OROGRAFIYA SHAROITIDA ZAHARLI ARALASHMALARNING ATMOSFERADA TARQALISHINI MATEMATIK MODELLASHTIRISHNING NAZARIY VA USLUBIY ASOSLARI: ILMIY ADABIYOTLAR TAHLILI	364
Арслонхонов Косимхон Азиз угли, Арслонхонова Гулнара Давронбек кизи, ГЕОЛОГО-МИНЕРАЛОГО-ГЕОХИМИЧЕСКИЕ ОСНОВЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ СКВАЖИННОГО ПОДЗЕМНОГО ВЫЩЕЛАЧИВАНИЯ УРАНОВЫХ РУД	381
Abduvossiyev Asadbek Abdusaid o'g'li, INTELLEKTUAL BOSIM O'ZGARTIRGICHLARIDA DINAMIK XATOLIKLARNI KOMPENSATSIYA QILISH VA O'LCHASH NOANIQLIGINI BAHOLASH	391
Xaydarova Ziyodaxon Azimjon qizi, NOCHIZIQLI GIPERBOLIK SISTEMALAR UCHUN LYAPUNOV MA'NOSIDA TURG'UN OQIMGA QARSHI PARCHALANUVCHI AYIRMALI SXEMA	397
Feruz Yuldashev, O'ZBEKISTONDA DAVLAT VA XUSUSIY OLIY TA'LIM MUASSASALARI TADBIRKORLIK IMKONIYATLARINING MOLIYAVIY SALOHİYATI VA RAQOBAT HOLATINING QIYOSIY EKONOMETRIK TAHLILI	405
Jurayev Vays Narzullayevich, Abduqahhorov Abdurohman Xasan o'g'li, Botirjonova Mexruza Maqsud qizi, O'ng'arov Jaloliddin Faxriddin o'g'li, KO'MIRNI KOKSLASH JARAYONIDA OLTINGUGURT BIRIKMALARINING O'ZGARISHI VA KAM OLTINGUGURTLI METALLURGIK KOKS OLIISH IMKONIYATLARI	413
Qosimov Oybek Abdumannon o'g'li, GIBRID SHAMOL QUYOSH ELEKTR STANSIYALARINING CHASTOTANI ROSTLASH QOBILIYATINI OSHIRISH	419
Qurbonova Feruza Murod qizi, BANKLARNING RAQAMLI XIZMATLARIDA UZLUKSIZLIK VA TEXNIK BARQARORLIKNI TA'MINLASHNING TASHKILIY-IQTISODIY MEXANIZMLARI	426
Teshaboyev Rivojiddin Ibrohimjon o'g'li, MOYLI KUCH TRANSFORMATORLARINING TEXNIK HOLATINI CHASTOTA TAVSIFI (FRA) ASOSIDA DIAGNOSTIKA QILISH	439
Shirinov Feruzbek Shuxratovich, Jòraqòziyeva Durdonaxon Davronjon qizi, KOMPYUTER TIZIMLARIDA DASTURIY TA'MINOT UNUMDORLIGINI OSHIRISH USULLARI	445
Турсунбаева Диёра Носиржон кизи, МУЛЬТИМОДАЛЬНЫЙ ПОДХОД К ИЗУЧЕНИЮ ЛИТЕРАТУРЫ В НАЦИОНАЛЬНЫХ КЛАССАХ (НА ПРИМЕРЕ СТАРШИХ КЛАССОВ)	449
Eshonqulov Shahzod Ravshan o'g'li, DASTURLASH VA AVTOMATLASHTIRISH (PYTHON) ASOSIDA TALABALARIDA TEXNIK TAFAKKURNI SHAKLLANTIRISH METODIKASI	458
Ismatov Baxtiyor Axmad o'g'li, Lutfullaev Sa'dulla Shukurovich, "UZBEKISTAN GTL" MCHJ MINERAL FRAKSIYALARINI TAVSIFLASH VA SINOVDAN O'TKAZISH	465
С. М. Васина, С. У. Насимова, ЭКСТРАКЦИОННЫЕ МЕТОДЫ КОМПЛЕКСНОЙ ПЕРЕРАБОТКИ ПЛОДОВ ОБЛЕПИХИ	482
Soibov Johongir Ergash o'g'li, SANOAT KORXONALARIDA ENERGIYA SAMARADORLIGINI OSHIRISHNING ZAMONAVIY USULLARI VA JAHON TAJRIBASI TAHLILI	492
Худайбердиева Махлиё Абдукаххоровна, ПОВЫШЕНИЕ СТАБИЛЬНОСТИ ФОРМИРОВАНИЯ ТКАНИ ПУТЁМ ОПТИМИЗАЦИИ ПАРАМЕТРОВ РАБОЧИХ ОРГАНОВ ТКАЦКОГО СТАНКА	496
Shukurova Ozoda Odil qizi, RAQAMLI PLATFORMALARDA XIZMAT KO'RSATISH SHARTNOMALARI BO'YICHA JAVOBGARLIKNI TAQSIMLASHNING FUQAROLIK-HUQUQIY MUAMMOLARI	501
Ko'chiboyev Alim Ixtiyor o'g'li, IOT QURILMALARIDA AMNESIA ZAIFLIKLARINI ANIQLASH VA BARTARAF ETISH USULLARINI TAKOMILLASHTIRISH	509
Makhliyo Abdukahorovna Xudayberdiyeva, EXPERIMENTAL EVIDENCE AND METHODOLOGICAL ASSESSMENT OF MECHANISMS ENSURING STABLE FABRIC FORMATION IN WEAVING LOOMS	521
Gulrux Xudoyorova, ABDULLA ORIPOV SHE'RIYATIDA BADIY TAFAKKURNING IJTIMOY VAZIFASI	525
Шамшидинов И.Т., Абдуллаев А.Н., Нажмидинов Р.Ю., Кузибаев Ф.Т., Боситов М.А., Рахимжонов А.Ғ., ФТОР ВА СУЛЬФАТ ҚЎШИМЧАЛАРИДАН ТОЗАЛАНГАН ЭКСТРАКЦИОН ФОСФАТ КИСЛОТА АСОСИДА ЮҚОРИ СИФАТЛИ ОДДИЙ ФОСФОРЛИ ЎҒИТ ОЛИШ ТЕХНОЛОГИЯСИНИ ТАДҚИК ЭТИШ	529
Олимова Мафтуна Баходир кизи, КОНЦЕПЦИЯ ЛИЧНОСТИ, СВОБОДЫ И НРАВСТВЕННОГО ВЫБОРА В РУССКОЙ ЛИТЕРАТУРЕ XIX–XX ВЕКОВ: Ф. М. ДОСТОЕВСКИЙ, Л. Н. ТОЛСТОЙ И М. А. БУЛГАКОВ	533
To'xtaraliyev Sohijjon Murodjon o'g'li, Xolmatov Dilshod Sottorjonovich, SANOAT TEXNOLOGIK JARAYONLARIDA HOSIL BO'LADIGAN CHANGLI GAZLARNI TOZALASH USULLARINING QIYOSIY TAHLILI VA QURILMALARNI TAKOMILLASHTIRISH ISTIQBOLLARI	540
Sayfidinova Zarina Nabijon qiz, XVI–XIX ASRLARDA O'RTA OSIYODA AYOLLARNING IJTIMOY-MADANIY HAYOTDAGI O'RNI: YOZMA VA HUJJATLI MANBALAR ASOSIDA	546
Nafosat Rakhmonova Nasim kizi, THE ROLE AND STRATEGIC PROSPECTS OF ARTIFICIAL INTELLIGENCE IN DEVELOPING TOURISM IN UZBEKISTAN	552
Yusupova Nasiba Qobuljonovna, EKISH MUDDATLARI VA ME'YORLARI ARPANING FENOLOGIK RIVOJLANISH DAVRLARIGA TA'SIRI	556





Eshtuxtaro va Shodiyona Abdizokir qizi, POLIMER MODDALARNING OPTIK XUSUSIYATINI O'RGANISH	560
Nizomiddin G'ulomov , DADAXO'JA SOTTIXO'JAYEVNING IJROCHILIK TALQINI XUSUSIDA	565
Berdiyeva Mohira Nurali qizi, MAHALLIY XOMASHYOLAR VA MODIFIKATSIYALANGAN GIPS BOG'LOVCHILARI ASOSIDA G'OVAKLI NAMLIKKA CHIDAMLI DEVORBOP MATERIALLAR TARKIBINI VA TEXNOLOGIYASINI ISHLAB CHIQUISH	572
Namazova Luiza Zavqi qizi , SUN'IY INTELLEKT VOSITALARIDAN FOYDALANISHNING TA'LIM SIFATI VA O'QUVCHILAR MUSTAQIL FIKRLASHIGA TA'SIRI	577
Ergasheva Zilola Ko'paysin qizi , MILLIY MUSIQA MEROSI ASOSIDA MAKTABGACHA YOSHDA GI BOLALAR NING ESTETIK MADANIYATINI RIVOJLANTIRISH METODIKASI	583
Qobilova Dildora Odilboyevna , METEOPARAMETRLAR DINAMIKASINI VA HUDUDNING MURAKKAB OROGRAFIYASINI INOBATGA OLGAN HOLDA ZAHARLI ARALASHMALARNING ATMOSFERADA KO'CHISHINI MATEMATIK MODELLASHTIRISH	591
Raimov Abdulla, Normurodov Chori Begaliyevich , KO'P CHEGARAVIY QATLAMLI STATSIONAR SINGULYAR QO'ZG'ALGAN TENGLAMALAR UCHUN CHEGARAVIY MASALALARNI SPEKTRAL-TO'R USULI BILAN SONLI MODELLASHTIRISH	598
Nurmuhammad Amonov , O'ZBEK VA TURK TILLARI O'RTASIDAGI TARJIMADA SOXTA EKVIVALENTLAR: "IZLEMEK-IZLAMOQ", "DU'SUNMEK-TUSHUNMOQ" VA "BABA-BOBO" BIRLIKLARI TAHLILI	603
Hasanov Jamshid Shokir o'g'li , O'SMIRLARDA XAVOTIRLANISHNING O'G'IL VA QIZ BOLALAR XULQ-ATVORIDA NAMOYON BO'LISHI VA GENDER TAFOVUTLAR	609
J.A. Turakulov, I.R. Juraev, J.Sh. Norkulov , MATHEMATICAL MODELING OF SUSPENSION FILTRATION IN POROUS MEDIA	617
Saidakbarov Jamshid Nematullo o'g'li , HUDUDIY BANK FAOLIYATINI BOSHQARISHNI TAKOMILLASHTIRISH: RESURS BAZASI VA KREDIT PORTFELI MUVOZANATI (QASHQADARYO VILOYATI MISOLIDA)	624
Xomidova Mahliyo Akobir qizi , INKLYUZIV TA'LIM MUHITIDA PEDAGOGIK JARAYONNI LOYIHALASHNING ILMIY-NAZARIY ASOSLARI	630
Saidakbarov Jamshid Nematullo o'g'li , MEHNAT RESURLARINI BOSHQARISH TIZIMIDAGI MUAMMOLAR VA ULARNI TAKOMILLASHTIRISH YO'LLARI (O'ZBEKISTON MISOLIDA)	636
Ergashev Ro'zibek Alisher o'g'li , MIS-PORFIR RUDALARINI FLOTATSION BOYITISHDA MAHALLIY XOMASHYO ASOSIDAGI REAGENTLAR KOMBINATSIYASIDAN FOYDALANISH ISTIQBOLLARI ..	640
Sh.B. Ashurova , EXCHANGE RATE CHANGES AND REGIONAL EXPORT PERFORMANCE IN UZBEKISTAN	645
Urazova Azadaxan Tursinbayevna , TARJIMASHUNOSLIK MASALALARI	652
Ismoilov Ro'zibek Rajabovich , TOPINAMBUR ILDIZINI EKSTRAKSIYA QILISH JARAYONINING TEXNOLOGIK PARAMETRLARINI AVTOMATIK NAZORAT QILISH TIZIMINI TAKOMILLASHTIRISH	656
Axmedova M.U. , YOSHLARDA RAHBARLIK SALOHİYATINI SHAKLLANTIRISHDA MA'NAVİY-MA'RIFIY OMILLARNING IJTIMOİY-PSIXOLOGIK XUSUSIYATLARI	667
Habibova Nasiba Anvarovna , OLIY TA'LIM MUASSASALARIDA RAQAMLI EKOLOGIK BOSHQARUV TIZIMINI SHAKLLANTIRISH METODIKASINI TAKOMILLASHTIRISH	671
Ismatullayeva Mo'tabar Xushvaqt qizi , THE EXPRESSION OF LINGUOCULTURAL UNITS IN HINDI AND UZBEK MEDIA TEXTS: A COMPARATIVE ANALYSIS OF FESTIVAL REPORTAGE IN AMAR UJALA AND KUN.UZ	679
Abdullayev Botir Shuxratovich , NASOS AGREGATLARINI AVTOMATLASHTIRISH VA QAROR QABUL QILISH TIZIMLARINI TAKOMILLASHTIRISH	687
Mustafoeva Intizor Normamatovna , TO'QMON MA'DAN NAMOYONI O'RGANILGANLIGINING TANQIDIY TAHLILI VA TOG' JINSLARIDAGI YASHIRIN MA'DANLASHUVNI ANIQLASH ISTIQBOLLARI	698
T.B.Xakimov , A SYSTEM-LEVEL FRAMEWORK FOR COUPLED THERMAL-ELECTRICAL OPTIMIZATION OF THERMOELECTRIC GENERATORS FOR LOW-GRADE WASTE HEAT RECOVERY	705
Doniyorova Nafisaxon Shukrulloxon qizi , INGLIZ TILIDAGI KO'P MA'NOLI FRAZALI FE'LLARNING O'ZBEK TILIGA TARJIMASIDA KONTEKSTUAL MA'NO MUVOFIQLIGINING CHO'G'ISHTIRMA-SEMANTIK TADQIQI	714
Shukurova Saida Qudratovna , MILLIY VA UMUMINSONIY QADRIYATLAR INTEGRATSIYASI ASOSIDA YOSHLARNING MA'NAVİY-AXLOQIY MADANIYATINI RIVOJLANTIRISH	722
Botirjonova Mexruza Maqsud qizi, Abduqahhorov Abdurrohman Xasan o'g'li, Abdukurimova Saida Abdujalilovna , IKKILAMCHI POLIETILEN VA POLIPROPILEN ASOSIDAGI POLIMER KOMPOZITSIYALARNI MODIFIKATSIYALASH USULLARI	729





Burqutbayeva M., YAXSHILIK VA YOMONLIK AKSIOLOGIK KONSEPTI TADQIQI	734
Fayziyeva S.F., Norboyev Q.N., BUZOQLAR TOKSIK DISPEPSIYASINING PATOLOGOANATOMIK O'ZGARISHLARI	738
Ismoilov Ro'zibek Rajabovich, TOPINAMBUR ILDIZINI EKSTRAKSIYA QILISH JARAYONIDA OPTIMAL HARORAT REJIMINI ANIQLASH VA AVTOMATIK ROSTLASH ALGORITMINI TAKOMILLASHTIRISH	742
Shaydo Masharipova Ozodboy qizi, XORAZM VILOYATI SHAROITIDA ZA'FARON (Crocus sativus L.) O'SIMLIGINING INTRODUKSIYASI VA MORFO-FIZIOLOGIK XUSUSIYATLARINI BAHOLASH.....	753
Q.N.Norboyev, Fayziyeva S, YANGI TUG'ILGAN BUZOQLARDA DISPEPSIYASIYANI DAVOLASH TAJRIBA NATIJLARI	758
Mirjamolova Moxira Abdugaffor qizi, SONLAR NAZARIYASI ASOSLARI	763
Shamsiddinov Quvonchbek Azamatovich, SOYA O'SIMLIGINING "MADAD" NAVINING NAVOIY VILOYATI SHAROITIDA RIVOJLANISH BIOLOGIYASI.....	766
D.R. Jumanazarov, M.R. Ro'zmetova, S.Sh.Ruzimov, SPEKTRAL RENTGEN KT ORQALI RENTGEN YUTILISHINI AJRATISH YORDAMIDA MATERIALLARNI TASNIFLASHNING YAXSHILANGAN PARAMETRIZATSIIYASI	770
Mirjamolova Moxira Abdugaffor qizi, GURUHLAR NAZARIYASI	777
Juraeva Maftuna Komilovna, COMMUNICATIVE LANGUAGE TEACHING IN EFL CLASSROOMS: BRIDGING METHODOLOGICAL PRINCIPLES AND CLASSROOM PRACTICE IN UZBEKISTAN	780
Mirjamolova Moxira Abdugaffor qizi, XARAKTERISTIK VA MINIMAL KO'PHADLAR	788
Ayimbetova D.M., INGLIZ, O'ZBEK VA QORAQALPOQ ADABIYOTIDA ANIMALISTIK OBRAZ VA MOTIVLARNING POETIK TRANSFORMATSIYASI: MATNSHUNOSLIK TAHLILI	792
Abdumalikov Ulug'bek Ziyodilla o'g'li, Ismoilov Ilyosbek Isroiljon o'gli, XITOY XIN LU ZAO №78 NAVINI O'RTA TOLALI MAHALIY NAVLAR BILAN DURAGAYLASH NATIJALARI	798
Bobokulova Muhabbat Muhammadiyeva, IKKI ROTORLI SHAMOL TURBINALARINING KONSTRUKTIV PARAMETRLARINI OPTIMALLASHTIRISH ORQALI ENERGETIK SAMARADORLIGINI OSHIRISH...802	
Жандуллаева Аксынгуль Жалгасбаевна, МИФОПОЭТИКА И ГЕНДЕРНЫЕ СТРАТЕГИИ В СОВРЕМЕННОЙ ЖЕНСКОЙ ПРОЗЕ (НА МАТЕРИАЛЕ ПРОИЗВЕДЕНИЙ ЛЮДМИЛЫ ПЕТРУШЕВСКОЙ И ТАТЬЯНЫ ТОЛСТОЙ).....	808
Jasur Karimjonov, CHALLENGING FACTORS FOR UZBEK TEACHERS IN EFL SPEAKING INSTRUCTION AND THE ROLE OF THE COMMUNICATIVE LANGUAGE TEACHING APPROACH	817
Musayeva Muxtasar Zayirjon qizi, OCT TASVIRLARINI SUN'YI INTELLEKT YORDAMIDA TAHLIL QILISH: GLAUKOMA VA MAKULA KASALLIKLARINI ERTA ANIQLASH IMKONIYATLARI	826
M.A.Yuldashev, SABZAVOTCHILIK MASHINASI URUG'O'TKAZGICHIDAGI URUG'LARNING QIYA TEKISLIKDAGI HARAKATINI MATEMATIK MODELLASHTIRISH VA DUMALASH-SIRPANISH CHEGARAVIY SHARTINI ANIQLASH	831
Razikova Madina G'ofurjon qizi, O'ZBEKISTON HUDUDLARIDA YUQORI TEZLIKDAGI INTERNET INFRATUZILMASINING YANGI RAQAMLI ISH O'RINLARI YARATILISHIGA SABABIY TA'SIRINI BAHOLASH.....	836
Ayimbetova D.M., TEXTOLOGICAL AND LITERARY SOURCE-STUDY FOUNDATIONS FOR THE STUDY OF ANIMALISTIC IMAGES AND MOTIFS	849
Xakimova Yoqutxon Toxirjon qizi, Muqimova Dilzodaxon Maxsudali qizi, BULUTLI TIZIMLARDA HISOBLASH RESURSLARINI MASHINALI O'QITISH ASOSIDA BASHORATLI BOSHQARISH.....	855
Raupov Sanjar Zafar o'g'li, OVOZ BOYLAMLARI DISPLAZIYASINI ERTA TASHXISLASH VA MALIGNIZATSIIYA XAVFINI BAHOLASHNI TAKOMILLASHTIRISH.....	863
Mingboyeva Tursunoy, USE THE CORPUS OF CONTEMPORARY AMERICAN ENGLISH COCA IN TEACHING ENGLISH AS A FOREIGN LANGUAGE FOR STUDENTS WHO ARE STUDYING IN SECONDARY SCHOOL IN UZBEKISTAN	870
Sirojev Xurshed Xo'jayevich , ANJIR MEVASINI VAKUUMLI MUZLATIB QURITISHDA BIOLOGIK FAOL MODDALARNI SAQLASH IMKONIYATLARINI TADQIQ ETISH	875
Mansurxo'jayev Majidxon Abbosxo'ja o'g'li, QOBIQ QUVURLI ISSIQLIK ALMASHINISH QURILMALARINI TAKOMILLASHTIRISHNING KONSTRUKTIV YO'NALISHLARI VA ULARNI BAHOLASH MEZONLARI	881
Iroda Berdiyeva Shuhrat qizi, Gavhar Sultonova Karimovna, DIGITAL SOLUTIONS FOR EFFICIENT CUSTOMS CLEARANCE: REDUCING DELAYS AND COSTS.....	885
Ayimbetova D.M., ANIMALISTIK OBRAZ VA MOTIVLAR AKS ETGAN MATNLARNING TARIXIY SHAKLLANISHI VA SAQLANISH XUSUSIYATLARI	893
O'rinov Sherarali Xayrullayevich, O'RIK DANAGI QOBIG'INI CHAQISH VA MAG'ZINI AJRATIB OLISH JARAYONIGA QOBIQ QALINLIGI HAMDA NAMLIKNING TA'SIRI	900
Sh.B. Ashurova, TRADE OPENNESS AND REGIONAL ECONOMIC DISPARITIES IN UZBEKISTAN.....	913





Шаробиддинова Гулшода Рустамжон кизи, ДИНАМИЧЕСКИЕ СВОЙСТВА КВАДРАТИЧНЫХ ГОМЕОМОРФИЗМОВ СИМПЛЕКСА.....	920
Behzod Baxodir o'g'li, Esanov Odil, JAMOAT BINOLARIDA QO'LLANILADIGAN GIBRID ISITISH VA HAVO ALMASHTIRISH TIZIMINING MATEMATIK MODEL.....	928
Mahkamov Ilhomjon Turdaliyevich, Madumarova Nilufarxon Ma'murjon qizi, GENERAL SUN'IY INTELLECT VOSITALARI ASOSIDA TALABALARNING MUSTAQIL TA'LIM FAOLIYATINI RIVOJLANTIRISH METODIKASI.....	934
Baxshilloev Habibulloxon Umarovich, UNSW-NB15 DATASETIDA TARMOQ HUJUMLARINI MASHINALI O'QITISH BILAN TOIFALASH: RANDOM FOREST VA XGBOOST MODELLARINI TAQQOSLASH VA CHEGARA SEZGIRLIGI TAHLILI.....	937
Sh.B. Ashurova, EXPORT DIVERSIFICATION AND REGIONAL ECONOMIC GROWTH IN UZBEKISTAN	942
Rasulova Oygul Salom qizi, PROBIOTIK MIKROORGANIZMLARNING INSON SALOMATLIGIDAGI AHAMIYATI	951
Ramazonov Azizbek Chori o'gli, SABZAVOTLARNI IMPULSLI BOSIMLAR FARQI ASOSIDA QURITISH JARAYONINI TAKOMILLASHTIRISH	959
Axmetov Shoxdavlat Ulug'bek o'g'li , GLOBALLASHUV SHAROITIDA TRANSFERT NARXLAR NAZORATINI TAKOMILLASHTIRISH	968
Jo'rayeva O'g'iloy Abdiraxim qizi, Eshoqulov Ravshan Abdurazakovich, QARSHI SHAHRIDA YOMG'IR SUVLARINI BOSHQARISHNING RAQAMLI MODEL VA IQLIM O'ZGARISHIGA MOSLASHUV TIZIMINI ISHLAB CHIQISH	977
Karomatov Shahzod Ilhomovich, KERATINNING ERUVCHI MODIFIKATSIYASINI OLIISH	985
G.B.To'liqinova, B.G'.Jo'rayev, QURILISHDA ENERGIYA SAMARADORLIGINI TA'MINLOVCHI ZAMONAVIY KONSTRUKTIV YECHIMLAR VA TAHLILI	991
Usmonov Botir Shukurillayevich, Begmurodov Asomiddin Faxriddin o'g'li, TEXNOLOGIK JARAYONLARDA HAMKORLIKDAGI ROBOTLAR (COBOT) XAVFSIZLIGI VA SAMARADORLIGINI BAHOLASH METODIKASI VA BOSHQARUV ALGORITMI	999
Мусаева Гоззал Махсатбаевна, ПРОБЛЕМА ПОВЫШЕНИЯ КАЧЕСТВА ШКОЛЬНОГО ОБРАЗОВАНИЯ В УЗБЕКИСТАНЕ И ЕЕ РАЗРЕШЕНИЕ НА СОВРЕМЕННОМ ЭТАПЕ.....	1008
Xudayberdiyeva O'g'iloy Hasan qizi, O'ZBEKISTONNING KESKIN KONTINENTAL IQLIM SHAROITIDA QUYOSH FOTOELEKTRIK MODULLARINING ENERGETIK SAMARADORLIGIGA HARORAT VA CHANGLANISHNING KOMPLEKS TA'SIRINI TADQIQ ETISH	1016
Bayniyazova Nargiza Polatovna, QORAQALPOG'ISTON QADIMIY QAL'ALARINING ME'MORIY-KOMPOZITSION XUSUSIYATLARI VA NUKUS JAMOAT MAKONLARINI LOYIHALASHDAGI TALQINI	1024
Danabayeva Mohigul Baxtiyarovna, SAID AHMAD HIKOYALARIDA QAHRAMON XARAKTERI VA RUHIY KECHINMALAR TASVIRI (mustaqillik davri hikoyachiligi kontekstida).....	1032
Valiyeva Feruza Telmon qizi, TO'DAKO'L SUV OMBORI GIDROFIL QUSHLARI FAUNASINING TUR TARKIBI VA EKOLOGIK XUSUSIYATLARI	1037
Shamsiyev Jonibek Oybek o'g'li, GENERATIV SUN'IY INTELLEKTNING ILMIY TADQIQOTLARDAGI O'RNI: YANGI IMKONIYATLAR VA AKADEMIK HALOLLIK MASALALARI	1042
Tuxtamurodova Gulnura Jamoliddin qizi, SUN'IY INTELLEKT BIZGA YORDAMCHIMI YOKI «XO'JAYIN»?.....	1050
Sharipova Shakhruza Nusrat qizi, EFFECTIVE METHODS OF DEVELOPING TECHNICAL THINKING THROUGH DIGITAL TECHNOLOGIES IN THE HIGHER EDUCATION SYSTEM	1057
Xudjanazarova Sabot Fayzullayevna, Hakimova Sakinabonu Sherzodovna, ARTIFICIAL INTELLIGENCE AND REGIONAL DEVELOPMENT	1065





ARTIFICIAL INTELLIGENCE AND REGIONAL DEVELOPMENT

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Abstract: Artificial intelligence (AI) has become an important driver of technological innovation, economic transformation, and regional development. Its application creates opportunities to improve productivity, optimize public administration, strengthen regional competitiveness, and support evidence-based strategic planning. This article examines the role of artificial intelligence in promoting innovation and socio-economic development, with particular attention to regional planning and territorial disparities. The study employs a qualitative analytical approach based on a review of academic and institutional literature. At the same time, the analysis highlights challenges related to digital inequality, insufficient infrastructure, limited technological skills, data protection, and algorithmic bias. Particular attention is given to the opportunities for integrating AI into regional development strategies in Uzbekistan. It concludes that integrating AI into regional development strategies requires coordinated investment in digital infrastructure, education, innovation ecosystems, and responsible data governance.

Keywords: artificial intelligence, regional development, innovation, socio-economic development, strategic planning, digital transformation, sustainable development.

Аннотация: Искусственный интеллект (ИИ) стал важным фактором технологических инноваций, экономической трансформации и регионального развития. Его применение создаёт возможности для повышения производительности, оптимизации государственного управления, укрепления конкурентоспособности регионов и поддержки стратегического планирования на основе данных. В статье рассматривается роль искусственного интеллекта в развитии инноваций и социально-экономических процессов с особым вниманием к региональному планированию и территориальным различиям. Исследование основано на качественном аналитическом подходе и обзоре научной литературы и публикаций международных организаций. Вместе с тем рассматриваются проблемы цифрового неравенства, недостаточной инфраструктуры, дефицита технологических навыков, защиты данных и алгоритмической предвзятости. Особое внимание уделяется возможностям интеграции ИИ в стратегии регионального развития Узбекистана. Делается вывод о необходимости комплексных инвестиций в цифровую инфраструктуру, образование, инновационные экосистемы и ответственное управление данными.

Ключевые слова: искусственный интеллект, региональное развитие, инновации, социально-экономическое развитие, стратегическое планирование, цифровая трансформация, устойчивое развитие.

Annotatsiya. Sun'iy intellekt texnologik innovatsiyalar, iqtisodiy transformatsiya va mintaqaviy rivojlanishning muhim omiliga aylanmoqda. Uni qo'llash mehnat unumdorligini





oshirish, davlat boshqaruvini takomillashtirish, hududlarning raqobatbardoshligini mustahkamlash va ma'lumotlarga asoslangan strategik rejalashtirishni rivojlantirish uchun yangi imkoniyatlar yaratadi. Mazkur maqolada sun'iy intellektning innovatsiyalar va ijtimoiy-iqtisodiy rivojlanishdagi o'rni, ayniqsa, mintaqaviy rejalashtirish va hududlar o'rtasidagi tafovutlarga ta'siri tahlil qilinadi. Tadqiqot ilmiy adabiyotlar hamda xalqaro tashkilotlar nashrlarini sifat jihatidan tahlil qilishga asoslangan. Shu bilan birga, raqamli tengsizlik, infratuzilmaning yetarli darajada rivojlanmaganligi, texnologik ko'nikmalar tanqisligi, ma'lumotlarni himoya qilish va algoritmik tarafkashlik bilan bog'liq muammolar ham ko'rib chiqiladi. O'zbekistonning mintaqaviy rivojlanish strategiyalariga sun'iy intellektni integratsiya qilish imkoniyatlariga alohida e'tibor qaratiladi. Xulosa sifatida raqamli infratuzilma, ta'lim, innovatsion ekotizimlar va ma'lumotlarni mas'uliyatli boshqarishga kompleks investitsiyalar kiritish zarurligi ta'kidlanadi.

Kalit so'zlar: sun'iy intellekt, mintaqaviy rivojlanish, innovatsiyalar, ijtimoiy-iqtisodiy rivojlanish, strategik rejalashtirish, raqamli transformatsiya, barqaror rivojlanish.

The rapid development of artificial intelligence has significantly influenced contemporary economic and social processes. AI technologies are increasingly applied in manufacturing, healthcare, education, transport, agriculture, and public administration. Their ability to process large volumes of information, identify patterns, and support forecasting creates new opportunities for improving economic efficiency and the quality of public services. Regional development is an important dimension of socio-economic progress. Regions differ in their infrastructure, economic structure, human capital, investment opportunities, and access to technological resources. These differences influence their capacity to adopt innovations and benefit from digital transformation.

Artificial intelligence can contribute to regional development by improving the analysis of local needs, supporting evidence-based policymaking, and facilitating the efficient allocation of resources¹. According to the Organisation for Economic Co-operation and Development (OECD, 2025), AI can strengthen regional development policies by improving administrative efficiency, supporting more targeted interventions, and enhancing coordination between levels of government. The purpose of this article is to analyse the opportunities and challenges associated with artificial intelligence in regional development and to identify policy measures that can promote its responsible and effective application.

This study employs a qualitative analytical approach based on a review of selected academic publications and reports produced by international organizations. The analysis focuses on three interconnected dimensions: technological innovation, socio-economic development, and strategic regional planning. The literature review indicates that AI can improve the efficiency of

¹ OECD. (2025). How Can AI Help Make Better Regional Development Policies in Korea? OECD Regional Development Papers, No. 178. OECD Publishing, Paris.
<https://doi.org/10.1787/be01f52d-en>





decision-making, facilitate the analysis of complex data, and support the development of new products and services. Nevertheless, the extent of these benefits depends on technological readiness, institutional capacity, and the availability of qualified personnel.

Kergroach and Héritier (2025) emphasize that AI adoption is progressing unevenly across regions, businesses, and economic sectors². Differences in infrastructure, investment, technological skills, and access to knowledge can contribute to emerging digital divides. Similarly, the OECD (2024) examines the geographical implications of generative AI for employment and local economic development. Its analysis highlights the importance of regional labour market conditions and the need for place-based policies that help communities respond to technological change.

UNESCO (2023) also stresses the importance of human-centred approaches to artificial intelligence, particularly in education and research. Its recommendations highlight data protection, equitable access, institutional preparedness, and the responsible use of emerging technologies.

Artificial intelligence supports innovation by improving data analysis, automating selected processes, and facilitating the development of new products and services. Machine learning algorithms can identify patterns in complex datasets, while predictive models can help organizations anticipate changes in demand, production requirements, and market conditions. In the industrial sector, AI can improve quality control, equipment maintenance, supply chain management, and production planning. In agriculture, AI-assisted systems may support crop monitoring, irrigation management, and the analysis of weather-related risks. These applications can contribute to productivity improvements when appropriate infrastructure, data, and technical expertise are available.

AI can also strengthen regional innovation ecosystems by facilitating cooperation between universities, research institutions, businesses, and public authorities. Data-driven approaches may help identify promising industries, evaluate investment priorities, and support technology-based entrepreneurship. Nevertheless, innovation outcomes vary across territories. Regions with established research institutions and access to investment may be better positioned to adopt advanced technologies. Therefore, regional innovation policies should promote digital infrastructure, professional training, research partnerships, and support for small and medium-sized enterprises. The contribution of AI to socio-economic development extends beyond technological innovation. It can influence productivity, employment, public services, education, and the quality of life.

² Kergroach, S., & Héritier, J. (2025). *Emerging Divides in the Transition to Artificial Intelligence*. OECD Regional Development Papers, No. 147. OECD Publishing, Paris. <https://doi.org/10.1787/7376c776-en>





In the labour market, AI can automate routine tasks and assist workers in performing complex activities. Although these changes may improve efficiency, they can also transform occupational structures and create demand for new professional skills³. Continuous learning and professional retraining are therefore essential for helping workers adapt to technological change. In education, AI-supported systems can provide personalized learning resources and assist teachers in evaluating students' progress. In healthcare, AI applications may support diagnostic processes, medical image analysis, and administrative tasks. In public administration, AI can help process documents, analyse service demand, and improve information management. Limited internet access, insufficient digital literacy, and financial constraints may prevent certain population groups from benefiting fully from new technologies. For this reason, AI-related development policies should combine technological investment with education, workforce development, and measures that promote equal access to digital opportunities.

For Uzbekistan, artificial intelligence presents opportunities to strengthen digital transformation and improve the evidence base for regional development policies. Potential applications include agricultural productivity, urban infrastructure planning, public service delivery, educational development, and support for small businesses. AI-assisted analysis could help regional authorities identify local development needs and evaluate alternative policy options. Universities and vocational education institutions could contribute by preparing specialists with digital, analytical, and technological competencies.

The following policy priorities are proposed:

1. Develop digital infrastructure: Improve internet connectivity and access to digital services in underserved areas.
2. Strengthen human capital: Expand digital literacy, AI-related education, and professional retraining programmes.
3. Support regional innovation: Encourage cooperation between universities, businesses, research institutions, and local authorities.
4. Promote responsible AI governance: Strengthen data protection, transparency, cybersecurity, and accountability.
5. Evaluate policy outcomes: Use measurable indicators to assess productivity, employment, service quality, and regional inequalities.

These measures should be adapted to the specific economic and institutional conditions of individual regions.

³ OECD. (2024). Job Creation and Local Economic Development 2024: The Geography of Generative AI. OECD Publishing, Paris.
<https://doi.org/10.1787/83325127-en>





The analysis suggests that AI can contribute to regional development through several interconnected mechanisms. It can support innovation, improve public administration, increase the efficiency of selected economic activities, and strengthen the analytical capacity of regional authorities. However, the benefits of AI depend on the broader development environment. Technology alone cannot eliminate regional disparities or guarantee economic growth. Its effectiveness is influenced by infrastructure, education, institutional capacity, investment, and access to opportunities. For Uzbekistan, further empirical research is needed to determine which AI applications provide the greatest benefits under local conditions. Pilot projects, regional comparisons, and systematic evaluation could help policymakers identify effective solutions and scale them responsibly.

CONCLUSION. Artificial intelligence has considerable potential to support innovation, socio-economic development, and strategic regional planning. Its capacity to analyse complex information, improve forecasting, and support decision-making creates opportunities to strengthen productivity, improve public services, and develop more targeted regional policies. At the same time, digital inequality, infrastructure limitations, skills shortages, data protection concerns, and algorithmic bias may restrict these benefits. The analysis indicates that successful AI integration requires a comprehensive approach combining digital infrastructure, human capital development, innovation support, responsible governance, and continuous evaluation. In Uzbekistan, AI could strengthen regional development planning and support improvements in agriculture, education, public administration, and local entrepreneurship. However, these opportunities should be assessed through empirical research and carefully evaluated pilot programmes. In conclusion, artificial intelligence should be considered not merely a technological instrument but a potential component of a broader regional development strategy. Its long-term contribution depends on whether technological innovation is translated into inclusive economic opportunities, improved public services, and sustainable territorial development.

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