ASKARALI TALKYBEK

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EDUCATION

Boston University, Metropolitan College Sep 2026 – Expected Aug 2027
Master of Science in Applied Data Analytics Boston, MA, USA

Nazarbayev University Aug 2021 – May 2025
Bachelor of Science in Computer Science Astana, Kazakhstan
Dean's List, Fall 2021
Relevant Coursework: Algorithms, Data Structures, Computer Systems, Databases, Probability & Statistics, Linear Algebra, Deep Learning

CERTIFICATIONS

Claude Certified Architect – Foundations, Anthropic
Agentic Architecture & Orchestration, Claude API, Claude Code, Model Context Protocol (MCP), Tool Design, Prompt Engineering, Structured Outputs, Context Management, Production Reliability

TECHNICAL SKILLS

Languages: Python, Java, C, C++, SQL, JavaScript, Swift, Rust

Backend & APIs: FastAPI, Django, Django REST Framework, Flask, Spring Boot, SQLAlchemy, Pydantic, Alembic, Celery, TaskIQ, GraphQL, REST, WebSockets

Distributed Systems: Microservices, Event-Driven Architecture, Asynchronous Messaging, RabbitMQ, Kafka, Redis, Prefect, Fault-Tolerant Systems, RPC

AI / Machine Learning: PyTorch, OpenCV, YOLOv8, Deep Learning, CVAE, LangChain, LangGraph, PydanticAI, MCP, RAG, Vector Databases, LLM Agents, LLM Evaluation, OpenAI API

Databases & Search: PostgreSQL, MySQL, Oracle, MongoDB, Apache Impala, Elasticsearch, Redis

Cloud & Infrastructure: AWS (EKS, ECS, EC2, RDS, SageMaker, Lambda), Docker, Kubernetes, Helm, CI/CD, GitHub Actions, Nginx, Cloudflare

Observability & Tools: Prometheus, Grafana, Git, GitHub, Linux, Apache Superset, Docker Swarm, Traefik

PROFESSIONAL EXPERIENCE

EPAM Systems Astana, Kazakhstan
Senior Software Engineer May 2025 – Aug 2026

- Technologies: Python, FastAPI, LangGraph, PydanticAI, MCP, Prefect, RabbitMQ, PostgreSQL, MongoDB, Apache Impala, Kubernetes, Helm, AWS EKS.
- Led backend delivery of an AI-assisted industrial monitoring platform for a major enterprise client from proof-of-concept through production handover, contributing to follow-on client engagements and additional contracts.
- Designed production microservices for processing real-time operational and sensor data, integrating enterprise systems including SAP, LIMS, PI historian data, and Apache Impala.
- Developed multi-agent AI workflows using LangGraph, PydanticAI, and Model Context Protocol (MCP), enabling agents to reason over enterprise data and interact with external services and internal tools.
- Designed and orchestrated asynchronous data and AI workflows using RabbitMQ, Prefect, and fault-tolerant service patterns.
- Identified and eliminated a critical RPC hot-path bottleneck through profiling and code-level optimization, reducing end-to-end latency from approximately 14 seconds to 2 seconds, an approximately 86% reduction.
- Integrated automated LLM evaluation tests into CI/CD pipelines to detect regressions in agent behavior and model-generated outputs before deployment.
- Built containerized deployment workflows using Kubernetes, Helm, and AWS EKS and contributed to production observability, reliability, and release processes.
- Designed normalized relational schemas and service boundaries for data-intensive backend systems using PostgreSQL and MongoDB.
- Participated directly in architecture discussions, code reviews, technical planning, and stakeholder meetings with enterprise client engineering and management teams.

WMA Group Astana, Kazakhstan
Backend / DevOps Engineer Oct 2024 – May 2025

- Technologies: FastAPI, PostgreSQL, RabbitMQ, Celery, LangChain, Prometheus, Docker.

- Built and deployed backend services using FastAPI, PostgreSQL, RabbitMQ, Celery, and Docker for an AI-enabled interactive platform.
- Designed an asynchronous integration bridge between an Unreal Engine 5 application and LLM services using RabbitMQ.
- Developed retrieval-augmented generation (RAG) agents for in-application search, retrieval, and AI-assisted interactions.
- Designed PostgreSQL database architecture following BCNF principles and implemented APIs for CRUD operations and AI-agent interactions.
- Containerized core and supporting services and automated application deployment to production infrastructure.
- Established application and infrastructure monitoring using Prometheus and configured production virtual machines for on-site deployment.

Cleverest Technologies Astana, Kazakhstan
Backend Developer Jan 2024 – Oct 2024

- Technologies: FastAPI, PostgreSQL, Oracle, Celery, Alembic, WebSockets.
- Optimized API schemas, database queries, and request paths, reducing average endpoint response time by approximately 10x.
- Designed and implemented a real-time notification system from scratch using WebSockets and Celery.
- Developed and maintained production APIs across 3 separate products.
- Led 3 engineers, including 2 junior backend developers and 1 intern, providing technical guidance and coordinating backend development.
- Improved database performance through indexes, views, materialized views, query optimization, and schema normalization.
- Configured virtual-machine infrastructure for successful on-site production deployments.

Information and Analytical Center for Oil and Gas (IACNG) Astana, Kazakhstan
Backend Developer Jul 2023 – Dec 2023

- Technologies: Django, Django REST Framework, Flask, Oracle, PostgreSQL, GraphQL.
- Migrated a legacy Oracle system originally developed in 2006 to PostgreSQL and redesigned database schemas for improved performance, maintainability, and scalability.
- Developed optimized Django REST APIs for analytics workloads capable of processing batches of approximately 2,000 JSON objects.
- Refactored approximately 206 existing API endpoints and introduced GraphQL-based retrieval to reduce unnecessary data transfer and improve client-side querying flexibility.
- Designed PostgreSQL database structures and backend services supporting analytical workflows in the oil and gas domain.

Interactive Blockchain Remote
Backend Developer Intern Dec 2022 – Aug 2023

- Technologies: FastAPI, PostgreSQL, LangChain, Steamship, OpenAI API.
- Integrated LangChain and Steamship tooling into an AI-enabled Telegram bot using OpenAI APIs.
- Developed PostgreSQL data models and backend APIs for deploying personalized LLM-based agents.
- Built early production experience with LLM application development, API integration, and AI-agent backend architecture.

SELECTED TECHNICAL PROJECTS

Autoheaven – Car E-Commerce Platform auto-heaven.com

- Technologies: FastAPI, Docker, AWS ECS, Elasticsearch, PostgreSQL, Redis, Celery, Alembic.
- Designed a microservice architecture for an automotive e-commerce platform with independent Authentication, Product, Search, Email, and Notification services.
- Deployed containerized services to AWS ECS and integrated Elasticsearch for search, PostgreSQL for persistent storage, Redis for caching, and Celery for asynchronous processing.
- Implemented JWT-based authentication and configured Cloudflare protection, DNS, service routing, and production deployment infrastructure.

Notifiber – AI Voice Reminder Assistant GitHub

- Technologies: Python, Rust, Asterisk, PJSIP, TTS/STT, PostgreSQL, Prometheus, Docker.
- Built an end-to-end AI voice reminder system combining speech-to-text, text-to-speech, VoIP calling, reminder scheduling, persistent storage, and monitoring.
- Implemented VoIP infrastructure using Asterisk/PJSIP and designed APIs for creating, managing, and executing scheduled voice reminders.
- Developed a scalable scheduling component using Rust Tokio and designed PostgreSQL storage for user interaction and analytical data.
- Added Prometheus instrumentation and Docker-based deployment infrastructure for service monitoring and operations.

Savey – AI-Assisted Personal Finance Mobile Application GitHub

- Technologies: Mobile Development, AI-Assisted Finance Tracking.
- Developed a mobile application for personal finance tracking with AI-assisted functionality for organizing and understanding user financial activity.
- Designed the product around streamlined expense tracking and intelligent assistance for personal financial management.

Drone-Based Failure Detection for Mining

- Technologies: YOLOv8, PyTorch, Computer Vision, Django, AWS EC2, AWS SageMaker.
- Developed and optimized computer-vision models using UAV imagery to identify industrial failures at gold-mining sites.
- Applied YOLOv8-based object detection to industrial inspection workloads, with estimated savings of up to 6% of client gross revenue.
- Deployed model inference through a Django REST API and analytical web platform for a mining-industry client.

Sapa Digital Communications – Telecom Integrations sapadc.kz

- Technologies: Spring Boot, FastAPI, RabbitMQ, Redis, PostgreSQL, pjsua2.
- Developed communication interfaces between Java Spring Boot and Python FastAPI services for a telecommunications platform.
- Optimized pjsua2 call-signaling workflows using secondary RabbitMQ queues to improve asynchronous message handling.
- Implemented WhatsApp notification workflows integrated with automated telecommunications call actions.

Smektep – AI-Assisted Learning Management System GitHub

- Technologies: FastAPI, PostgreSQL, SQLAlchemy, LangChain, OpenAI API, Redis, Nginx, GitHub Actions, Cloudflare.
- Designed the backend and relational database architecture from scratch, applying normalized schema design and building application APIs with FastAPI and SQLAlchemy.
- Developed LLM-powered functionality for AI-assisted assignment generation and educational workflows using LangChain and model APIs.
- Built production infrastructure including Nginx routing, SSL certificates, Cloudflare protection, DNS configuration, and Linux server deployment.
- Implemented CI/CD pipelines for backend and frontend applications using GitHub Actions.
- Participated directly in discussions with customers and potential investors while developing the product.

ADDITIONAL ENGINEERING EXPERIENCE

Ailana
Backend / DevOps Developer

- Technologies: FastAPI, PostgreSQL, MongoDB, Celery, RabbitMQ, LangChain, GitHub Actions, Traefik, Grafana, Prometheus.
- Built backend deployment infrastructure and CI/CD pipelines for production services.
- Designed database architecture and implemented two core backend services with asynchronous inter-service communication.
- Configured monitoring using Grafana and Prometheus and managed application routing with Traefik.
- Implemented OTP and SMTP infrastructure supporting application authentication and notification workflows.

Government Analytics Platform
Freelance DevOps Engineer

- Technologies: Docker, Docker Swarm, Nginx, PostgreSQL, Grafana, Apache Superset.
- Managed infrastructure spanning 7 independent servers hosting microservices and analytics tooling.
- Configured load balancing, Dockerized deployments, Nginx routing, and infrastructure monitoring.
- Managed access and supporting infrastructure for Apache Superset, pgAdmin, and analytics-team services.

RESEARCH EXPERIENCE

Nazarbayev University Astana, Kazakhstan
Student Researcher – Machine Learning for Human Movement
Supervisor: Prof. Prashant Jamwal

- Technologies: Python, Deep Learning, Conditional Variational Autoencoders (CVAEs).
- Investigated Conditional Variational Autoencoders for generating movement suggestions for professional swimming athletes.
- Explored deep-learning approaches for modeling and generating human movement patterns from athlete data.

Nazarbayev University Astana, Kazakhstan
Student Researcher – Cuffless Blood Pressure Prediction
Supervisor: Prof. Jurn Gyu Park

- Conducted research on blood-pressure prediction using physiological measurements from cuffless medical devices.
- Applied data-driven and machine-learning methods to physiological time-series data as part of a senior capstone research project.

SmartView Innovations
Computer Vision Research – Industrial UAV Inspection

- Technologies: Python, PyTorch, YOLOv8, Computer Vision, Django, UAV imagery.
- Conducted applied computer-vision research using industrial drone imagery for automated inspection of gold-mining infrastructure.
- Developed and evaluated vision models for detecting operational failures and integrated resulting models into an analytical software platform.

RESEARCH MANUSCRIPT

Automated UAV-Driven Inspection of Sprinkler-Irrigated Heap-Leaching Pads with Computer Vision Dec 2024

- Research manuscript describing the development and application of UAV-based computer-vision methods for automated industrial inspection of heap-leaching sites.

AWARDS & HONORS

Gold Medal, iGEM 2022 Oct 2022

- Developed standalone Python software integrating scientific MATLAB workflows into a user-facing application and contributed to the team's web platform.

Winner, Jas Ventures Computer Vision Hackathon Mar 2023

- Developed an OpenCV/PyTorch retail-monitoring system with a Django REST API and PostgreSQL database deployed on AWS.

Winner, AI Battle 2023

- Presented and defended an industrial computer-vision system for UAV-based mining-site inspection.

Winner, CodeON Biohackathon Sep 2021

- Developed a Python/Biopython algorithm for identifying restriction-enzyme target sites in DNA sequences and generating substitutions while preserving translated protein sequences.