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ÖZKAN BARTU LEYLEK

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WORK EXPERIENCE

DATA SCIENTIST – ABDI İBRAHIM – 13/03/2026 – Current – ISTANBUL, TÜRKIYE

Website: https://www.abdiibrahim.com.tr/

• Developed enterprise-grade analytical web applications and dashboards using Flask, Python, and SQL Server for commercial and operational teams.
• Built a GPS anomaly detection platform analyzing millions of telemetry records through geospatial and rule-based analytics.
• Designed a Business Intelligence platform for private hospital and physician engagement analysis, including KPI tracking and drill-down reporting.
• Developed automated ETL pipelines and reporting solutions, transforming large-scale business data into actionable insights.
• Built pharmacy churn analytics models to identify customer attrition risks using historical transaction and behavioral data.
• Automated monthly and YTD performance reporting processes, integrating SQL Server, Python, Excel, and email-based distribution workflows.
• Optimized data processing pipelines and reporting applications handling multi-million-row datasets.
• Collaborated with business, CRM, and sales teams to deliver data-driven decision support solutions and analytical tools.

ARTIFICIAL INTELLIGENCE & EMBEDDED SYSTEMS ENGINEER – KONTROLMATIK TECHNOLOGIES – 06/01/2025 – 03/2026 – ISTANBUL, TÜRKIYE

Department: Controlix | **Email:** bartu.leylek@controlix.com | **Website:** https://www.kontrolmatik.com/en

- Led the end-to-end development of 10+ industrial AI, IoT, and automation projects, delivering complete solutions spanning network design, edge computing, software development, DevOps, and on-site deployment across multiple facilities.
- Architected and deployed a real-time CCTV analytics platform integrating YOLO-based face recognition, PPE / fall / violence detection, and IoT relay modules for automated door-access control over live IP camera streams (RTSP), fully optimized for edge GPU acceleration.
- Built a production-grade people detection & multi-target tracking system using YOLOv11; integrated with HIPVision IP cameras; and developed a Flask-based analytical dashboard for live monitoring, statistical reporting, and operational insights.
- Designed and implemented an enterprise-grade IVR automation system using Asterisk, incorporating NLP, speech-to-text, and RESTful microservices for the HIDOS Call Center Automation project.
- Built an AI-powered Business Intelligence platform using Retrieval-Augmented Generation (RAG) with the OpenAI API, enabling automated document comparison, contract analysis, and decision-support dashboards.
- Developed and optimized advanced computer vision and deep learning pipelines on NVIDIA Jetson (Orin/Nano) devices, improving inference latency, memory efficiency, and system reliability for real-time industrial workloads.
- Created an AI-powered Business Intelligence & RAG platform using the OpenAI API, enabling automated document comparison, contract analysis, and decision-support dashboards for enterprise clients.
- Delivered the full ISG Safety Automation Project, covering LAN architecture, DevOps (Docker, systemd, CI/CD), edge–cloud communication, AI model development, hardware integration, and on-site commissioning.
- Engineered predictive analytics solutions including: SIDOS Fleet Telemetry & Predictive Maintenance Model using real telematics data for dynamic service interval estimation and SCADA-driven regression models for factory process optimization and anomaly detection.

- Built the computer vision powered quality control system for Kaptan Demir Çelik, including LAN setup, camera integration, and custom vision model training for on-premise industrial environments.
- Took part in technical meetings, field visits, and government tenders, providing engineering insight and supporting pre-sales, feasibility analysis, and client presentations.

FOUNDER – MN - GESGUESS – 08/2024 – Current

- Founded an AI-driven health technology startup delivering end-to-end medical machine learning, deep learning and computer vision applications, currently including four production-ready models: GESGUESS, Endometriozis Ağrım, Endometrium Vision and Fetal Gender AI.
- Designed and trained multiple deep learning models using ultrasound, gynecology-related signals and image datasets; implemented preprocessing pipelines, evaluation metrics, and iterative model improvement workflows
- Developed a secure and scalable backend architecture using Python/Flask, handling user management, API endpoints, inference services, database operations, and deployment on cloud infrastructure.
- Built all frontend interfaces, including responsive dashboards, result pages, and user-facing flows optimized for non-technical medical professionals.
- Integrated payment processing solutions, ensuring compliance with medical and regional regulations.
- Currently managing continuous product updates, user feedback cycles, technical roadmap planning, and early-stage marketing and customer acquisition efforts; the productes are actively used by +10 clinics across Gaziantep, Cyprus, Istanbul and Adana, and currently operates as a low-maintenance, passive-revenue startup.

FULL STACK DEVELOPER INTERN – SKYIT SERVICES – 01/2023 – 06/2023 – ALBERTA, CANADA

Website: https://www.skyit.services/

- Developed and documented backend APIs using Django, contributing directly to the core service architecture of the company's main platform.
- Supported the backend engineering team on the GHG Module Project, implementing data processing logic, improving API structure and assisting with integration tasks.
- Collaborated with the Komet FE–BE Team, building features across both frontend and backend using React and FastAPI within an agile development workflow.
- Participated in weekly engineering meetings, providing updates, receiving feedback, and aligning development tasks with project requirements.
- Contributed to debugging, code reviews, and documentation to support maintainability and team collaboration.

LEARNING ASSISTANT (PROGRAMMING FUNDAMENTALS) – SABANCI UNIVERSITY, FACULTY OF ENGINEERING AND NATURAL SCIENCES – 10/2023 – 02/2024 – ISTANBUL, TÜRKIYE

Website: https://www.sabanciuniv.edu/tr

- Served as a learning assistant for the undergraduate course CS201 – Programming Fundamentals, supporting students during recitation sessions and guided practice.
- Explained core programming concepts (functions, arrays, pointers, data structures, problem-solving strategies) using both theoretical and hands-on approaches.
- Assisted students in debugging code, understanding algorithms, and translating theoretical concepts into working implementations.
- Provided office hours for one-on-one support, answering course-related questions and helping students strengthen their foundational programming skills.
- Collaborated with the course instructors to align explanations, exercises, and recitation content with the course objectives.

LEARNING ASSISTANT (DATABASE SYSTEMS) – SABANCI UNIVERSITY, FACULTY OF ENGINEERING AND NATURAL SCIENCES – 10/2022 – 01/2023 – ISTANBUL, TÜRKIYE

Website: https://www.sabanciuniv.edu/tr

- Supported the CS306 - Database Systems course by explaining core topics during recitation sessions, including relational algebra, SQL, schema design, normalization, indexing, and transaction management.
- Answered student questions by combining both theoretical foundations and practical implementation insights, helping them understand database behavior beyond syntax.
- Assisted students in their term projects, providing guidance on ER modeling, query optimization, schema refinement and backend–database integration.
- Collaborated with course instructors to ensure recitation materials and explanations aligned with the course's academic objectives and project requirements

COMPUTER VISION ENGINEER INTERN – THREAD IN MOTION – 07/2022 – 08/2022 – ISTANBUL, TÜRKIYE

Website: https://www.threadinmotion.com/

- Developed a computer vision model to determine whether bottle caps were open or closed, using Python, OpenCV and YOLOv5; implemented data preprocessing, model training, and inference pipeline optimization.
- Assisted with debugging and improving accuracy through image augmentation, threshold tuning and performance evaluation.
- Participated in weekly engineering meetings, providing progress updates and aligning tasks with project goals.
- Reviewed academic literature on object detection and industrial vision systems and completed hands-on coursework on Coursera to strengthen theoretical and practical CV knowledge.

GAME DEVELOPER INTERN – CONNECTINNO – 07/2022 – 08/2022 – ISTANBUL

Website: https://www.connectinno.com/

- Developed a multi-level matching game using Unity and C#, implementing core game mechanics, level progression, and UI interactions.
- Contributed to the development of a utility tool that parsed level data from Excel files and converted it into structured JSON format, improving the content pipeline and automating level configuration workflows.
- Participated in weekly team meetings to synchronize development tasks, review progress and align with design requirements.

EDUCATION AND TRAINING

09/2018 – 02/02/2024 Istanbul, Türkiye

BSC COMPUTER SCIENCE AND ENGINEERING Sabanci University

Website https://cs.sabanciuniv.edu/en/education/undergraduate |

Thesis Lake Water Quality Mapping from Satellite Images with Computer Vision

09/2021 – 06/2023 Istanbul, Türkiye

MINOR IN PHILOSOPHY Sabanci University

Website https://phil-minor.sabanciuniv.edu/content/welcome

09/2019 – 01/2020 Boston, United States

VISITING STUDENT (GAP SEMESTER) Kings Education

Website https://www.kingseducation.com/

LANGUAGE SKILLS

Mother tongue(s): **TURKISH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Programming Languages

Python | C++ | C# | SQL | Dart | HTML | CSS | JavaScript

Platforms - UI Software Development Frameworks

Unity | Github | Flutter

Operating Systems

Linux | Windows, Ubuntu, iOS | Kali Linux

Databases

MySQL | PostgreSQL | Firebase | SQLite

Frameworks

MATLAB | Back-end (Flask, Django) | OpenCV | Object detection models: RCNN, FasterRCNN, Yolov4, Yolov5 | YOLOv13 | YOLOv11 | Flask Web Framework | FastAPI

Libraries

Python visualization libraries (Matplotlib & Seaborn) | Frameworks & Libraries: OpenCV, Sci-kit learn, NumPy, Pandas, SciPy, Matplotlib. | Deep Learning (Tensorflow, Pytorch(basic), Jax/Flax(basic))

Hardware and Embedded Systems

ESP32 | HW Design with FPGA | Work with Arduino | Raspberry Pi

Cybersecurity Tools

Kali Linux, Burp Suite, Metasploit, Wireshark, Nmap, Mimikatz

DevOps

DigitalOcean | Docker | Platform : AWS Cloud | PythonAnyWhere | GitHub Actions | Deployment on HEROKU

CONFERENCES AND SEMINARS

04/06/2025 – 06/06/2025 Frankfurt, Germany

Tech Show Frankfurt

Over two days, I had the chance to engage with some of the leading companies in Cloud, AI Infrastructure, Cybersecurity, Big Data, and Data Centres. I attended insightful sessions on emerging trends, connected with industry professionals, and gained valuable perspectives on where the tech world is heading. I was honored to attend the event as a representative of my company, Kontrolmatik, further strengthening our visibility and network within the industry.

Link https://www.techshowfrankfurt.de/

20/12/2025 – 22/12/2025 Istanbul, Turkey

16. ULUSLARARASI MÜHENDİSLİK, MİMARLIK VE TASARIM KONGRESİ

At the 16th Engineering, Architecture and Design Congress, I had the opportunity to present our paper titled “Edge-AI Based Personal Protective Equipment Monitoring System for Industrial Occupational Safety” which was published in the conference proceedings.

Link https://www.muhendislikmimarliktasarimkongresi.org/

PUBLICATIONS

2025

A Two Stage Artificial Intelligence Based Predictive Maintenance Model for Industry 4.0 Applications

Authors: Özkan Bartu Leylek, Doç. Dr. Muhammed Kürşad Uçar, Ömür Şansal Çenberli | **Journal Name**: International Journal of Innovative Science and Research Technology | **Volume, Issue and Pages**: Volume 10, Issue 12

Link https://www.ijisrt.com/a-two-stage-artificial-intelligence-based-predictive-maintenance-model-for-industry-40-applications

2025

Edge-AI Based Personal Protective Equipment Monitoring System for Industrial Occupational Safety

Authors: Özkan Bartu Leylek, Selahattin Furkan Keçe, Azime Kara | **Journal Name**: 16. ULUSLARARASI MÜHENDİSLİK, MİMARLIK VE TASARIM KONGRESİ | **Publisher**: MÜHENDİSLİK, MİMARLIK VE TASARIM KONGRESİ

Link https://github.com/bleylek/16.-Uluslararasi-Muhendislik-Mimarik-ve-Tasarim-Kongresi-Bildiri

PROJECTS

2023 – 2025

Selected Professional Projects

Project **#1** - Industrial ISG Automation System (Kontrolmatik)
Developed a fully integrated industrial Occupational Safety (ISG) automation platform combining computer vision, IoT hardware, DevOps pipelines, and LAN design.

- Built a real-time CCTV analytics system using Flask, Docker, and GitHub Actions CI/CD, streaming RTSP/MJPEG feeds from IP cameras to a web dashboard.
- Implemented YOLO-based PPE detection (helmet, vest, goggles), face recognition, fall/violence detection, and real-time person counting.
- Developed IoT relay modules for automatic door/turnstile control, enabling instant safety responses based on AI detections.
- Designed and deployed the complete LAN architecture, including switch configuration, IP planning, and stable RTSP distribution for high-bandwidth camera networks.
- Deployed inference pipelines on NVIDIA Jetson edge devices with systemd services and MQTT-based messaging for low-latency alerting.
- Delivered on-site factory installation, network validation, and operational testing across multiple industrial environments.

Project **#2** - SIDOS Vehicle Tracking & Predictive Maintenance Dashboard (Kontrolmatik)
Developed a modern fleet management & predictive maintenance dashboard integrated with Teltonika FMC150 telematics devices.

- Built real-time vehicle tracking, route history visualization, and alert monitoring dashboards.
- Processed telemetry data (speed, harsh braking, RPM, engine behavior signals) to compute driver behavior metrics and vehicle performance indicators.
- Designed and trained machine learning regression models to estimate dynamic maintenance intervals and predict component wear based on real driving behavior.
- Enabled data-driven maintenance scheduling by calculating “maintenance remaining km/days” instead of fixed mileage servicing.
- Implemented backend APIs, database models, and visualization components for fleet operators.

Project **#3** - AI-Powered Business Intelligence Platform (Kontrolmatik)
Designed an intelligent BI system using Retrieval-Augmented Generation (RAG) with the OpenAI API:

- Implemented automated contract comparison, offer analysis, and CV-to-job matching.
- Integrated vector databases for semantic retrieval and LLM reasoning for unstructured text analysis.
- Built modular AI agents (contract analyzer, CV ranking engine, offer comparator).
- Designed a Flask + Docker + CI/CD architecture with SQLAlchemy-based persistence.

Project **#4** - Industrial Computer Vision Safety System for Kaptan Demir Çelik (Kontrolmatik)
Built a full industrial computer vision solution for the Kaptan Demir Çelik factory:

- Designed the entire LAN topology and ensured lossless RTSP distribution for high-frame-rate cameras.
- Trained custom CV models for defect detection and product quality analysis.
- Installed, tested, and optimized the system on-site, ensuring real-time inference without cloud dependency.

Project **#5** - GESGUESS (Pregnancy Likelihood Prediction Platform)
Developed a medical prediction web app providing personalized pregnancy likelihood reports:

- Implemented ML/DL models using hormone-level datasets.
- Built automated email reporting and clinician-friendly UX flows.
- Full-stack development using modern web frameworks.
- Link: https://www.gesguess.ai/

Project **#6** - Endometriosis Prediction AI Platform
Built a deep learning model achieving 90%+ accuracy on endometriosis prediction:

- Designed preprocessing pipelines, model architectures (TensorFlow/PyTorch), and evaluation metrics.
- Developed a web platform enabling patients to get instant risk scores.
- Enabled significantly faster pre-diagnosis workflows.
- Link: https://endometriozisagrim.com/

Project **#7** - IVR Bot for HIDOS Call Center Automation (Kontrolmatik)
Developed an Asterisk-based IVR automation system incorporating NLP:

- Implemented RESTful microservices, JWT-based authentication, and STT pipelines (85%+ accuracy).
- Applied sentiment analysis, keyword extraction, and SLA-based request routing.
- Built dashboards for operator performance, call durations, and category distribution insights.

09/2021 – 01/2024

Selected Undergraduate Projects

- Project **#1** Lake Water Quality Mapping from Satellite Images with Computer Vision: Development of multiple deep neural network models for regression to estimate water quality with respect to various chemical parameters for graduation project.
- Project **#2** Online Store Web Application: Development of an Amazon-like online store application, which interacts over the web with an application web-server for a course project by using Django, Python, HTML, CSS and JavaScript.
- Project **#3** Movienator Mobile Application: Development of a Instagram-like short-film themed video sharing social platform (mobile app) for a course project by using Flutter and Firebase.

- Project **#4** SUMED Database System: Development of a database system that store entities and entity attributes, and include relations for functionality for course project by using HTML, CSS, JavaScript, PHP, and MySQL.
- Project **#5** Spam Detection with NLP: Built a spam detection model using Python and NLTK on a dataset of 5,574 labeled SMS messages. Preprocessed text data and applied NLP techniques for classification. Trained and evaluated the model, demonstrating the process in a Jupyter notebook.
- Project **#6** A Computer Vision Project for Bottlecap Detection: Within my internship at Thread in Motion, development of a ML model to detect and tell whether a bottle is open or not by using Python, OpenCV, Yolov5, Flask, and PyCharm.
- Project **#7** A Hypercasual Mobile 3D Matching Game: Within my internship at Connectinno, development of a "Candy Crush-like" 3D mobile matching game featuring levels, music, point system, animations by using Unity and C#.

VOLUNTEERING

02/2019 – 06/2019 Istanbul

Volunteering for Stray Animals

- Regular visits to animal shelters
- Supporting veterinary efforts
- Providing emotional supprot to stray animals

Link https://cip.sabanciuniv.edu/en/homepage

MILITARY SERVICE

10/07/2025 – 06/08/2025

15th Infantry Training Brigade Command in Amasya

Military Service: Fulfilled mandatory military service requirement, completed in 2025

Link https://www.kkk.tsk.tr/kkksablonmaster/header/kurumsal/egitim/15.P.EGT.TUG.pdf