

YILDIZ KARADAYI

PhD. in Artificial Intelligence

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ARTIFICIAL INTELLIGENCE & ADVANCED ANALYTICS

- **25+** years of experience in database systems, data analytics, business intelligence and data mining,
- Expertise on software architectures, systems design, development on large-scale data systems,
- As "*Digital Transformation and Advanced Analytics Leader*", responsible for developing and promoting innovation using **AI** and data technologies.
- Leading R&D initiatives for **AI** projects, foster research culture, and promote latest advancements through academic partnerships.
- Responsible of the delivery of **ML** and **AI** products: Expertise on team building and data intensive projects management,
- Expertise on designing predictive models, anomaly and fraud detection systems for Finance, Telecommunications, Hospitality, Manufacturing and Logistics,
- Planning and management of **MLOps**, continuous delivery and automation pipelines in machine learning processes.

EDUCATION

PhD. 2015 – 2020

Doctor of Philosophy in
Computer Engineering

Major: Artificial Intelligence

Kadir Has University,

Istanbul, Türkiye

PROFESSIONAL EXPERIENCE

Earthquake Pattern Recognition Research Project

January 2023 – Present

I have designed an artificial intelligence based "earthquake pattern recognition model" to analyze earthquakes and infer possibilities of future big earthquakes in Türkiye.

Also designed end-to-end software architecture on cloud and mobile application for Google Play platform: **QuakeAi**

https://play.google.com/store/apps/details?id=com.ykmk.ai.quake_analyzer

For more information, please visit: www.quakeai.com.tr

B.Sc. 2014 – 2020

Business Administration

Istanbul University,

Istanbul, Türkiye

M.A.Sc. 2002 – 2006

Master of Applied Science in
Computer Engineering

Major: Data Mining

Simon Fraser University,

Burnaby, BC, Canada

B. Eng. 1993 – 1998

Bachelor of Engineering Degree
in Computer Engineering

Istanbul Technical University,

Istanbul, Türkiye

KEY COMPETENCE

- ✓ Digital Transformation
- ✓ Advanced Analytics
- ✓ Data Science
- ✓ Artificial Intelligence (AI)
- ✓ Machine Learning (ML)
- ✓ Deep Learning (DL)
- ✓ Big Data
- ✓ Relational Databases
- ✓ Team Building
- ✓ Business Intelligence
- ✓ Data Driven Design
- ✓ Software Development
- ✓ MLOps
- ✓ R&D

What is QuakeAi?

- ✓ QuakeAi is an "Earthquake Pattern Recognition Application" developed with artificial intelligence technology.
- ✓ I have designed a unique AI model: "the spatio-temporal earthquake pattern recognition model".
- ✓ The artificial intelligence model used by QuakeAi has been trained and optimized using seismic activity data that has occurred in Türkiye over the last 25 years.
- ✓ By analyzing earthquakes occurring within the borders of Türkiye, QuakeAi calculates the probability of an earthquake being a fore-shock of a possible medium or large earthquake that may occur in a region with a radius of approximately 200 kilometers within a month (being a precursor to an earthquake of magnitude 5.0 or above).
- ✓ As data source, the open data provided by "The European-Mediterranean Seismological Center (EMSC)" is used: <https://www.seismicportal.eu/>

Data Analytics Director, Fibabanka

December 2021 – January 2023

Delivering analytics projects to turn data into actionable insights and decisions to achieve competitive edge in banking sector:

- ✓ Responsible for the management of three analytics teams: Retail Banking Analytics, Commercial Banking Analytics, and Analytical Competence Center.
- ✓ Mandated to collaborate with executive stakeholders to understand and translate Fibabanka's aggressive growth strategies into data operations and analytics road-map.
- ✓ ML Operationalization: Responsible for the continues integration/improvement and continues deployment of ML models on Iguazio Platform.
- ✓ Lead teams to analyze data to understand the patterns and relationships in it, and figure out how to employ those insights in an operational way, e.g. to increase the cross sale and customer satisfaction.
- ✓ Lead R&D project "Customer Embedding": Analyze customers' digital footprints based on mobile banking usage to understand customer needs.

R&D AND ACADEMIC ACHIEVEMENTS

✓ **Journal and conference papers:**

- "Unsupervised Anomaly Detection in Multivariate Spatio-Temporal Data using Deep Learning", was accepted to present at "Workshop on Advanced Analytics and Learning on Temporal Data" at ECML/PKDD (The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases) 2019, in Würzburg, Germany.
- "Unsupervised Anomaly Detection in Multivariate Spatio-Temporal Data Using Deep Learning: Early Detection of COVID-19 Outbreak in Italy" was published by IEEE Access which is freely accessible via: <https://lnkd.in/d6UCEDx>.
- "A Hybrid Deep Learning Framework for Unsupervised Anomaly Detection in Multivariate Spatio-Temporal Data" has been published by the journal MDPI, "Computing and Artificial Intelligence" section in Applied Science: <https://www.mdpi.com/2076-3417/10/15/5191>.
- "Time-Sensitive Embedding for Understanding Customer Navigational Behavior in Mobile Banking" was presented at ICCIDA (International Conference on Computing, Intelligence and Data Analytics) Conference, Kocaeli University, Türkiye, on September 17, 2022. I was the project lead and fourth author.

✓ **PhD. Thesis:**

"A Hybrid Deep Learning Framework for Unsupervised Anomaly Detection in Multivariate Spatio-Temporal Data": In this thesis, a new data anomaly detection approach is proposed using deep learning and a novel data processing technique for multivariate spatio-temporal datasets.

✓ **Master Thesis:**

"Fault diagnosing of multivariate processes based on data mining": In this thesis, a new data mining framework combining Principal Component Analysis (PCA) and modern data mining techniques (k-Means clustering and decision tree induction techniques) is developed to exploit multivariate process data to detect and identify process faults.

Advanced Analytics Group Manager, Doğuř Teknoloji

April 2021 – December 2021

- ✓ Built and led the advanced analytics teams which composed of data scientists, data engineers, data analysts and project managers.
- ✓ Planned the execution and delivery of Machine Learning (ML) and Artificial Intelligence (AI) projects within Doğuř Holding companies.
- ✓ Identified and planned for the near and long term infrastructure needs for MLOps requirements.
- ✓ Enhancing the AI maturity level within Doğuř Holding companies: Built a strategic road-map, and planned the implementation with executive stakeholders.
- ✓ Overseeing and managing the execution projects as part of R & D center requirements:
 1. Implemented and evaluated state-of-the-art Deep Learning algorithms in NLP (Natural Language Processing), speech-to-text, and image detection problems,
 2. Led project consortium for ITEA (Eureka R&D&I Cluster) Projects.

Planning & Allocation Data Science Manager, LC Waikiki

March 2020 – April 2021

As part of the digital transformation team which was responsible to build company's strategic data road map, I was responsible for:

- ✓ Developing and promoting cognitive systems and advanced data technologies,
- ✓ Building a data science team from scratch: Manage a team of data scientists and data engineers for the delivery of advanced analytics projects,
- ✓ Delivering advanced analytics projects which were predictive models built using Machine Learning (ML), in order to:
 - I. Build data driven and smart Decision Support Systems (DSS),
 - II. Enable efficient planning for store allocations,
 - III. Accurately estimate demand and plan budget, and
 - IV. Lower human error in seasonal product planning.

Chief Data Scientist, Innova – Türk Telekom

January 2018 – March 2020

Responsible for the management & delivery of Machine Learning (ML) projects enabling new customer acquisition and extending the product portfolio. Took the lead to build company's strategic AI (Artificial Intelligence) road map:

- Built AI products for various customers,
- Managed a team of 6 data scientists and lead talent acquisition for AI projects.

✓ Anomaly Detection:

“AI Based Anomaly Detection” product was aimed for finance, manufacturing, and logistics industries. It was designed:

- To detect abnormal and fraudulent events,
- To reduce unplanned downtime and
- Improve productivity using the data generated by humans and machines.

AI would help to answer the following questions:

- Where is the abnormal behavior or fraud and when will it occur?
- What are the early signs of the abnormal event?
- Where and when have failures/fraudulent events happened?
- How can one predict unplanned failures before they occur?

✓ Fraud Detection Project:

The project entailed detection and prevention of dealer fraud, multi-level segmentation of customers, anomaly detection of customer spending and behaviors, real-time processing of streaming data for timely detection and prevention of fraud instances (using mobile usage data and payment information).

Responsible for high level design and architectural decisions made throughout the Fraud Project such as:

- Technology and tool selection for AI infrastructure
- Analyzing business requirements for solving by AI
- Advanced exploratory data analysis and data visualization
- Selection of AI and Machine Learning models for different scenarios
- End-to-end execution: Train, test and management of modules via Model Server.

✓ Predictive Maintenance:

Successfully managed and delivered Türk Telekom’s first AI based predictive maintenance solution for network backbone system. It was aimed to ease the maintenance of Türk Telekom's backbone network structure by predicting hardware faults and alarms in the core network 24 to 48 hours in advance.

Senior Solution Architect, Innova – Türk Telekom

October 2013 – January 2018

Responsible for the delivery of all data analytics and IoT based projects:

- Designing and building new products
- Answering customer needs in the industry 4.0 era.

✓ SkywaveloT Platform (Innova’s IoT Cloud Platform):

This project has gained TÜBİTAK support and won EuroCloud2016 prize:

- SkyWave IoT based vertical applications: Smart City, Smart Store, Smart ATM
- SmartCity Project built for Government of City of Karaman in Türkiye: Responsible for architectural design of new smart city products on SkyWaveloT Cloud Platform.

✓ Upon successful completion of Türkiye’s first ever smart city project, I was invited as VIP attendee by Government of China to Tm Forum "SmartCity in Focus" conference in Yinchuan, China, 2016.

✓ SkyWaveloT has a real-time complex event processing engine and embedded device automation

platform which monitors the user and device behaviors and takes automated actions to control remote devices:

- Historical customer behavior analysis
- Device failure pattern analysis
- Real-time alarm monitoring
- Alarm generation and management

Solution Architect, Huawei Türkiye R&D

2012 – 2013

Worked as a Subject Matter Expert on the Customer Relationship Management (CRM) modules in various Telecommunication projects:

- ✓ As BSS (Business Support System) Solution Architect, I was responsible of the implementation of Huawei NGBSS solutions on various clients.
- ✓ Specialized especially in Telecom CRM systems (Customer Care, Marketing, Loyalty, Self Service Platforms and Social CRM) and Online Charging in Telecom.
- ✓ Successfully managed the implementation of NGBSS Project which was implemented for one of the leading Telecom Operator at Bishkek, Kyrgyzstan.

Senior Software Engineer, TURKCELL Technology R&D

2010 – 2012

Responsibilities included:

- Gaining a complete understanding of clients' requirements
 - Transforming them to the software solutions,
 - Leading CRM projects,
 - Mentoring and leading junior software engineers,
 - Planning and management of products on Turkcell Club and Churn platforms.
- ✓ Managed successful delivery of the Customer Retention project which helped increase the overall revenue of Turkcell.
 - ✓ Led the design, development and implementation of TURKCELL Club Platform on which multiple Value-Added Services (VAS) developed for marketing and campaign products.
 - ✓ Won the ICT – CxO Award for my successful leadership of "**Turkcell Club Platform**" project in 2011.

Project Engineer, Yapı Kredi Bankası

2006 – 2010

Involved in design and development of newly developed Internet and Mobile Banking products of Yapı Kredi Bankası A.Ş. after the biggest ever bank merge in Türkiye, with the following main responsibilities:

- ✓ Took the leadership role during project design, development, testing, and integration phases,
- ✓ Successfully planned and implemented of many applications and services for internet banking application,
- ✓ Led the implementation of software development life-cycle procedures & coding standards,

- ✓ Worked as lead software engineer and architect for the newly developed “Consumer and Business Internet Banking” platforms after merging with Koç Bank,
- ✓ Supported the design and development of "Open World" project, which a new credit cards system was designed using the WEB 2.0 Technologies and SOA architecture.

Senior Java Developer, Accenture, Vancouver, BC, Canada (2006)

Application Analyst, Royal Canadian Mounted Police (RCMP), Surrey, BC, Canada (2003 – 2006)

Java Developer, HSBC, Vancouver, BC, Canada (2001 – 2002)

Took responsibility as software consultant & Java developer for the newly developed internet banking project of HSBC, Vancouver, Canada.

Analyst Programmer, TURKCELL (1998 – 2001)

Worked for the Billing & Charging Domain and Fraud Department of Turkcell.

TECHNICAL SKILL-SET

Advanced Analytics Languages and Tools: Python, R, Python Scikit-Learn Machine Learning Library, Pandas, Numpy, Keras, Tensorflow, NLP libraries of Python (nltk and gensim), and Matplotlib.

Software Engineering Tools: Object oriented programming (Java, C, C++ and Dart), parallel programming, SQL and PL/SQL, relational database design and management (Oracle).

Mobile Application Development: Android Development on Google, and Flutter Development for cross-platform development (iOS and Android Platforms).

Certification

Title	Completed on
Oracle Certified Professional for Oracle 9i – DBA	2003
Sun Certified Developer for the JAVA 2 Platform	2001
Oracle Certified Professional for Oracle 8i – DBA	2001
Sun Certified Programmer for the JAVA 2 Platform	2001

Professional Training

Course Name	Completed on
Geleceğin Liderleri, TBB (Türkiye Bankalar Birliği)	2022
Situational Leadership (SLII), Blanchard Institute	2021
Koç Liderlik ve Koçluk, LC Waikiki Eğitim Merkezi	2021
Project Management Principles	2009
Advanced SQL and PL/SQL	2007
Managing Projects	2005
Oracle 10G Application Server: New Features for Administrators	2005
Building Distributed Applications with JAVA	2000
Advanced Object-Oriented Web Programming	2000
Oracle 8i Performance Tuning	2000
Oracle SQL Performance Tuning	2000