Alexandr K.
Architect/Team-lead Technical Lead of Machine Learning

SUMMARY

- Over 20 years of experience as a scientist in Probability Theory, Mathematical Statistics, Theory of Stochastic Processes, Data Science - PhD in mathematics. Dissertation - Investigation of dynamical systems under the effect of fast random oscillations (https://drive.google.com/file/d/1_DJKEm70VTshRR8XHVHM1Hi9-tC5u3VD/view - .NETdeveloper with 9 years of experience in creating desktop and web applications. Good knowledge of most of the common technologies for the platform (C#, ASP.NET) - Experience in designing and developing of big distributed systems, knowledge of how to conduct a project from its definition of production. - Experience of work in a team and experience in the management of a short team (up to 5 members) - Experience in team leading, including teams with 5+ developers. - Knowledge of how to improve a project from a business perspective - Accustomed to self-education and independent problem solution - Responsible, hard-working, result-oriented - Intermediate English. - Availability starting from ASAP

TECHNICAL SKILLS

Main Technical Skills	Python, .NET
Programming Languages	C#, C++, Delphi, JavaScript, Python, R, VBA
.NET Platform	ADO.NET, ASP.NET, Entity Framework, .NET, .Net WCF, VBA
Java Frameworks	Apache Spark
Scala Frameworks	Apache Spark
Python Frameworks	Flask
JavaScript Frameworks	jQuery
AI & Machine Learning	Keras, OpenCV, PyTorch, Scikit-learn, TensorFlow
Python Libraries and Tools	Keras, Matplotlib, Pandas, PyTorch, Scikit-learn, TensorFlow
Salesforce Ecosystem	SalesForce Workflow
Data Analysis and Visualization Technologies	Apache Spark, Pandas
Databases & Management Systems / ORM	Apache Spark, AWS DynamoDB, FireBird, Microsoft SQL Server, MySQL, SQL, SSRS
UI Frameworks, Libraries, and Browsers	HTML, jQuery, XAML

Cloud Platforms, Services & Computing	AWS, Azure
Amazon Web Services	AWS DynamoDB
Azure Cloud Services	Azure DevOps Server (ex TFS Team Foundation Server)
Platforms	1C, SharePoint, Silverlight
Collaboration, Task & Issue Tracking	Atlassian Trello, Jira, Redmine
Web/App Servers, Middleware	Azure DevOps Server (ex TFS Team Foundation Server)
Virtualization, Containers and Orchestration	Docker
Version Control	Git, SVN
Methodologies, Paradigms and Patterns	Kanban, Scrum
Operating Systems	Linux, Windows
Third Party Tools / IDEs / SDK / Services	Microsoft Visual Studio Code, Visual Studio
SDK / API and Integrations	RESTful API, Winforms

EXPERIENCE

Full-stack Developer, Technical Lead of Machine Learning (since 2019)

September 2014 – Present

Deputy Director, IT center of Donetsk National University

2011 – September 2014

Associate professor of probability theory and mathematical statistics sub-faculty, IT center of Donetsk National University

2008 – 2011

Engineer-programmer, IT center of Donetsk National University

2004 – 2008

Senior lecturer of probability theory and mathematical statistics sub-faculty, Donetsk National University

1998 – 2008

PROJECTS

Solution Architect, Technical Lead

Apr 2022 – Present
Description: The aim of the project is to create a custom Indoor Positioning System (IPS) to have information about a specific place and at a particular time at a construction site. One of the client's main requirements is to build a solution avoiding the common GPS technology. Therefore, we are using Computer Vision, accelerometer, and gyroscope sensor data for more accurate navigation inside the building.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: Python, OpenCV, Pandas, NumPy, SciPy, scikit-kinematics, AWS S3, AWS Lambda, AWS ECS

Solution Architect, Technical Lead

Nov 2021 - Jan 2022
Description: The main task is to create a back-end part for a face recognition application from photographs of children taken by preschool teachers.
The goal of the project is to deploy a service in which the photographs taken are immediately uploaded to the server, and then, using this service, parents can see the photographs of their children in their photo viewer application.
For this, the photographs of all the children in the group are pre-registered, and if from the uploaded (to the server) photographs there are those where the faces of the children are similar to the children who are registered, then notifications are sent to the parents of these children
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: PyTorch, MXNet, TensorFlow, Scilit-learn, Scilit-image, OpenCV, AWS

Solution Architect, Technical Lead

Sep 2021 - Jan 2022
Description: The purpose of the demo application is to take photos of reinforcement bars at a construction site, and then analyze these photos using computer vision.It is necessary to solve the following tasks:
- Use the demo application to take a photo (input).
- By means of computer vision, give an answer, how many vertical (or horizontal) reinforcing bars are in the nearest layer (output).
- What is the distance in centimeters between the reinforcing bars (output).
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: Phyton, OpenCV, Pillow, Scikit-learn

Solution Architect, Technical Lead

July 2021 - Sep 2021
Description: Japan is a country with increased seismic activity; it is important to ensure the stability of structures during construction. The rigidity of the structures of the columns and

beams is provided with the help of reinforcing bars (rods). Reinforcement rods are arranged in a grid - vertically and horizontally.
The goal of the project is to automate the marking of reinforcing rods using an AI solution on an Android mobile device.
Implemented features:
- selection of photos from the gallery
- recognition of rebars horizontally and vertically
- automatic marking of horizontal and vertical rebars
- enable the user to correct the automatic marking
- enable the user to add/remove markup, if necessary.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: Python, OpenCV, Pillow, Scikit-learn, Java, OpenIMAJ

Solution Architect, Technical Lead

Jun 2021 - Sep 2021
Description: The RPA solution for the worldwide company offers industry-leading shipping services, including transportation, warehousing, distribution, custom brokerage, and logistics management solutions.
We provide the RPA solution based on Machine Learning, Computer Vision, and Optical Character Recognition that replaces human labor in the workflow. The system allows separate incoming documents, upload one-page documents as scanned images, determine their type by checking the established set, extract text from predefined page fields, detect the signatures (if they are provided), recognize the QR codes.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development. Act as a liaison between the technical and sales teams to convert requirements into outcomes
Technologies: Python, NumPy, Pandas, Sklearn, Fasteaxt, Auto-sklearn, NLTK, SpaCy, Torch, Thinc, RyTorch, TensorFlow, OpenCV

Solution Architect, Technical Lead

Jun 2021 - Jul 2021
Description: The aim of the project is to help photographers choose “good” photos of children’s faces to increase sales.
With the help of computer vision is needed to be able to recognize the following features that affect photo sales:
- Smile
- Sight direction into the camera
- A variety of scene frames
It is also necessary to be able to calculate statistics for each person ID.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: PyTorch, MXNet, TensorFlow, Scikit-learn, Scikit-image, OpenCV, AWSSolution

Architect, Technical Lead

May 2021 - Nov 2021
Description: In Japan, many people raising children send their children between the ages of

0 and 5 to preschool. Photos with children in preschool are a good way to control. On the other hand, preschool workers are busy and find it difficult to find time to report.
The goal of the project is to help educators using facial recognition technologies in the following:
- To simplify the work of educators at the direction of the recipients (parents) of the child depicted in the photo.
- Display the previous number of photos and previously sent photos for each child.
- During the shooting, mark children for whom it is forbidden to take photos.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: Python3, TensorFlow Lite, ML Kit, OpenCV, C++, Java, OpenIMAJ

Solution Architect, Technical Lead, Personal docs recognition

Apr 2021 - Jun 2021
Description: The goal of this project is to recognize personal documents through machine learning and neuro-linguistic programming in order to reduce manual input.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: Python, OpenCV, NumPy, Pandas, YOLO, Pillow, Scikit-image

Solution Architect, Technical Lead

Mar 2021 - Apr 2021
Description: The goal of the project is to create a system for cataloging, organizing documentation, and photo materials created by users on construction sites.
The creation of a system that analyzes the text entered by the user and determines the necessary data should be implemented:
- compliance of the type of construction work with the manual item - a regulatory document of the Japanese government governing the procedure for the implementation of construction work;
- the location of the ongoing construction work relative to the object (placement).
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Comply with strategic guidelines and architecture. Control the solution development. Act as a liaison between the technical and sales teams to convert requirements into outcomes.
Technologies: NumPy, CV2, Tesseract, Craft, Tourch, Sklearn, AWS

Solution Architect, Technical Lead

Feb 2021 - Sep 2022
Description: The goal of the project is to create Kokuban (blackboards) automatically using data from design documentation, building structure drawings. It is necessary to achieve full compliance with the drawing documentation and the data transferred to e-Kokuban (blackboards).
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Control the solution development.
Technologies: NumPy, CV2, Tesseract, Craft, Tourch, Sklearn, AWS

Solution Architect, Technical Lead

Feb 2021 - Nov 2021
Description: The application represents a geosocial networking app that uses geolocation and the user's time to offer relevant recommendations for nearby locations, places of interest, and events. We developed it based on users' geolocation data in two languages: English and Vietnamese.
The required recommendation system has to use:
Computer Vision to analyze images;
NLP technology to analyze chat and image captions, and automatically pinpoint topics of interest, locations, dates and time for proper advice;
Recognition of voice commands in several languages; support of topic modeling of social messages, as well as syntactic text simplification of complex sentences in the information repository structured as a graph.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection. Comply with strategic guidelines and architecture. Control the solution development. Act as a liaison between the technical and sales teams to convert requirements into outcomes.
Technologies: Python, Panda, Spacy, PyTorch, OpenNLP, Flask, sklearn, CMU Sphinx, Google Speech Recognition, Google Cloud Speech API, AWS, NLTK, Amazon S3, Amazon SQS, Amazon EC2

Solution Architect, Technical Lead

Sep 2020 - Mar 2021
Description: The goal of the concept is to prove the business value of introducing artificial intelligence and natural language processing into manual document processing.
The following features will be implemented within the POC:
- Identify Supplier Invoices and its Information.
- Augment Identification and extraction with Machine Learning
- Basic user dashboard to analyze system operation - includes only one table with information about fields and result of Identification with Machine Learning.
Responsibilities: Conduct an architectural system evaluation. Analyze technology environment. Define a collaboration framework. Analyze technical and business requirements. Define a procedure and process to ensure solution delivery. Take part in the technology selection Control the solution development.
Technologies: Python, NumPy, Pandas, Sklearn, Fasteaxt, Auto-sklearn, NLTK, SpaCy, Torch, Thinc, RyTorch, TensorFlow, OpenCV

ML Engineer

July 2020 - Dec 2020
Description: The Government Building Regulations App that enables applicants to automate the compliance check of 3d building construction models with validation rules for receiving building construction permission. The project goal is to remove manual work from the permitting process, thereby reducing the approval process from weeks to days.
The main goal of NLP research at this project is develop approach of building rules extraction from normative documents and laws. These rules contain different measures, objects with their properties etc.
Responsibilities: Integration NLP module into the app
Technologies: SpaCy, NLTK, stanza, xmltodict, NumPy, Scikit-learn, Pandas, .NET, Xbim (eXtensible Building Information Modelling toolkit)

ML Engineer

Jul 2020 – Present
Description: The product of the development is the face detection and recognition service for Lecre Inc. that provide photo services in schools and kindergardens. So the focus of our development are childern's faces and faces with different emotions.
The business flow is as follows: the photographers make photo sessions, download the photos to the sysem.
Parents enter the system to choose 1-2 photo with their childres and after the system gives back the results of all found and recognized faces.
The system works with such complicated cases as: detection and recognition of rotated and rolled faces, faces with 90 degrees of rotation (or profile faces), small faces and small faces in group photos.
The environment we use: AWS EC2 instance as infrastructure platform type g4dn.2xlarge, and RDS data base.
We consider the further scaling and customizatio of the FR system by training the neural net to detect background.
Responsibilities: Creating dataset for testing problem cases. Testing issues for Azure, Kairos, and AWS. Creating report with accuracy estimation for each problem cases for each face recognition services
Technologies: Docker, AWS

Solution Architect, ML Engineer, ETL4VHM

Jun 2020 - Jul 2020
Description:
There is a framework for developing vehicle health monitoring applications
VHM applications combine multiple machine-learning models and specialized processing step for analyzing vehicle signals
Vehicle signals are obtained by capturing CANBUS traffic as well as by actively polling OBD signals
The models are trained on a huge amount of recorded data in a distributed manner using Spark infrastructure
Prior to training, the data should undergo an ETL process for tabulating, imputations, scaling, resampling, aggregation, and other processing steps
The project objective is to develop a natively scalable spark-compatible library that implements a number of ETL operators that are tailored to VHM data.
Responsibilities: Solution architecture creating. Library implementing. Deployment testing. Documenting
Technologies: PySpark, Azure Databricks, Spark, ASAM MDF

Cloud Architect, ML Engineer, Face recognition in retail

Jun 2020 - Jul 2020
Description: The project aims to develop the system which automatically measures customer's satisfaction level, age/gender distribution and shop spots of the interest.
Responsibilities: The cloud architecture creation. The heat map construction for the spot of interest. The visitor's statistics preparation. The visitor's statistics visualization. The stream processing implementation
Technologies: Amazon S3, Amazon Kinesis Firehose, Amazon Kinesis Streams, Amazon Kinesys Analytics, Amazon DynamoDB, Amazon Cognito, Amazon Lambda, Amazon EC2, Amazon IoT Core, Amazon IoT Greengrass, Amazon Athena, Amazon SNS, Apache Spark or Apache Storm, Python, NumPy, Redshift, EMR

ML Engineer

May 2020 - Jun 2020
Description: The first stage of the project is research that should improve the human's face recognition accuracy on the photos.
Delivery of the research: a comparative overview of the Azure, AWS, Kairos platforms APIs to define the best solution to resolve the issues:
Full face detection.
People amount on the photo.
Face size on the photo detection.
And to evaluate some custom solution that will cover all of the issues resolving.
Along with this the dataset will be created.
Responsibilities: Creating dataset for testing problem cases. Testing issues for Azure, Kairos, and AWS. Creating report with accuracy estimation for each problem cases for each face recognition services
Technologies: Python, OpenCV, Azure Face API, AWS recognition, Kairos Face recognition API

Cloud Architect, ML Engineer

Oct 2019 - Apr 2020
Description: The project is intended for measuring a driver's behavior and scoring driver for his rides. The project consists of several parts - a hardware device that allows measuring driver's behavior on 4 parameters - hard braking, hard acceleration, hard cornering, and speed. The other two parts are WebView that serves as the admin panel for data management and mobile application where the driver can see his statistics and scoring.
Responsibilities: The cloud architecture creation. The heat map construction for the spot of interest. The visitor's statistics preparation. The visitor's statistics visualization. The stream processing implementation. The batch processing implementation
Technologies: Hadoop, Amazon S3, Amazon Kinesis Firehose, Amazon Kinesis Streams, Amazon Kinesis Analytics, Amazon DynamoDB, Amazon Cognito, Amazon Lambda, Amazon EC2, Amazon IoT Core, Amazon IoT Greengrass, Amazon Athena, Amazon SNS, Glue, Apache Spark or Apache Storm, Python, NumPy, Redshift, EMR

.NET Developer, Labgroup

Description: Secure document management system. The project is about securing a document management system and consists of providing a more intuitive and attractive interface for clients, with a breakdown into modules.
Responsibilities: Development

Back-End Developer, Inventia

Description: A site specializing in working with patents and trademarks. Implemented the possibility of ordering one of four possible types of quotes (patents or trademark) for the countries indicated by users, displayed all order information about quotes and its cost. To display the necessary data, implemented the parser for a site with a list of patents. Also implemented for customers. Authorized users have the opportunity to view their orders, status, order a new quote in their dashboard. There is also an administrative panel for working with the site.
Responsibilities: Development
Technologies: ASP.NET Web API with SPA (Single-Page Applications), AngularJS, Entity Framework, MS SQL Server

Back-End Developer

Description: Server Automated workplace for freight traffic management specialist. Creating an application for registration an order on transportation of certain cargoes in the specified delivery locations, saving the information of orders and customers in the DB, showing this information and information about drivers and vehicle fleet, buying and selling cars from the vehicle fleet.
Responsibilities: Development
Technologies: C# (WinForm), MS SQL

Full-stack Developer, Food Provider

Description: For the customer, this application provides a view of current food information (category, name, image, price, description, etc.) on the website. For the administrator in a restaurant, this application offers a series of operations to add, update, delete and query the information of food, food order, and employees.
Responsibilities: Development
Technologies: .Net, MVC, Core, Entity Framework, HTML/CSS/Bootstrap, JS, Angular4, Typescript

Back-end Developer

Description: Online store of digital equipment.
Responsibilities: Development
Technologies: C#, ASP.NET MVC, JavaScript, jQuery

Full-stack Developer, xCircular

Description: A platform for collecting information about products. It consists of specifications in the customized set of fields and visual presentations as well. This information is used to create shop windows.
Responsibilities: Development
Technologies: JavaScript, jQuery, Css, Html5, .NET, WEB API, WCF Services

.NET Developer, Norbit

Description: Trading platform for conducting actions and tender drawings. This trading platform is integrated with other trading platforms.
Responsibilities: Development
Technologies: JavaScript, jQuery, ASP.NET MVC, Entity Framework, MS SQL, WCF Services, Microsoft Dynamics CRM

.NET Developer, Enterprise Scoring System

Description: This is used in «Metinvest Holding».
Responsibilities: Development
Technologies: ASP.NET MVC, Silverlight, Entity Framework, MSMQ

.NET Developer

Description: This is used in Ministry of Education and Science of Ukraine.
Responsibilities: Maintenance
Technologies: ASP.NET MVC, JavaScript, T-SQL

.NET Developer, Reporting system on EDEBO data

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: SSRS, WCF Services, Entity Framework, SharePoint sites

.NET Developer, System of data collection from educational organizations of Donetsk region

Description: This is used in the education department of Donetsk Region State Administration.
Responsibilities: Development, Maintenance
Technologies: SharePoint sites and lists

.NET Developer, Student results registration

Description: This is used in Donetsk National University.
Responsibilities: Statement, Application architecture
Technologies: 1C

.NET Developer, SharePoint list data renewal

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: SharePoint Apps, TypeScript

.NET Developer, Exterior data system caching

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: WCF, Windows Services, Entity Framework

.NET Developer, Student survey

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: ASP.NET, JavaScript, T-SQL

.NET Developer, Schedule

Description: This is used in Donetsk National University.
Responsibilities: Statement, Application architecture
Technologies: Visual FoxPro, C++

.NET Developer, Student scientific rating registration

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: 1C

.NET Developer, Entrant System

Description: This is used in Donetsk National University.
Responsibilities: Development, Maintenance
Technologies: ASP.NET, JavaScript, T-SQL

.NET Developer, Subsystem Selection committee of system FMAS

Description: This is used in Donetsk National University.
Responsibilities: Statement, Database designing Business logic stored procedures realization
Technologies: Delphi, Firebird

EDUCATION

PhD in mathematics, Donetsk State University
1998 -2008