

# Rolan A.

## Architect/Team-lead ML/Computer Vision

### SUMMARY

- More than 10 years' experience of software development - Data science skills. Computer Vision, multiple view geometry, camera calibration, LIDAR, object detection, semantic segmentation, instance segmentation, time series, dynamic programming - Software Engineering skills. Experience of IoT (Internet of Things) and Embedded development - Solution-oriented scientist focused on R&D and product delivery with 9 years of experience on the outsource domain - Accustomed to self-education and independent problem solution - My inspiration is exiting by challengeable and reasonable engineering tasks. Pitching skills from years of conferences attendance and strong understanding of business needs are my strengths - Intermediate English. - Availability starting from ASAP

### TECHNICAL SKILLS

<b>Main Technical Skills</b>	Python
<b>Programming Languages</b>	C, C++, Python, R, Swift
<b>AI &amp; Machine Learning</b>	CNN, Keras, LSTM, NumPy, OpenCV, PyTorch, TensorFlow, Xgboost
<b>Python Frameworks</b>	Flask
<b>Python Libraries and Tools</b>	Keras, Matplotlib, NumPy, PyTorch, SciPy, Seaborn, TensorFlow, TFLite
<b>PHP Frameworks</b>	LAMP
<b>Data Analysis and Visualization Technologies</b>	Jupyter Notebook
<b>Databases &amp; Management Systems / ORM</b>	MySQL
<b>UI Frameworks, Libraries, and Browsers</b>	Dlib
<b>Methodologies, Paradigms and Patterns</b>	Agile, Scrum
<b>Scripting and Command Line Interfaces</b>	Bash
<b>Mail / Network Protocols / Data transfer</b>	BIND, DNS, TCP/IP
<b>Platforms</b>	CMS, Drupal, Joomla, WordPress

<b>Virtualization, Containers and Orchestration</b>	Docker, KVM (for Kernel-based Virtual Machine), XEN
<b>Third Party Tools / IDEs / SDK / Services</b>	Gentoo, MatLab, Qt Framework
<b>Version Control</b>	Gerrit, Git
<b>Operating Systems</b>	GNU, iOS, Linux, Windows
<b>Deployment, CI/CD &amp; Administration</b>	Jenkins
<b>Collaboration, Task &amp; Issue Tracking</b>	Jira
<b>Message/Queue/Task Brokers</b>	MQTT

## EXPERIENCE

### Technical Lead of Computer Vision

June 2022 – Present

### Lead Computer Vision Engineer, Pheon Inc

September 2021 – February 2022

### Technical Lead, Intetics Inc

March 2021 – September 2021

### Professor Assistant, Karazin KNU

May 2020 – June 2021

### Software Engineer, GlobalLogic Inc (Kharkiv, Ukraine)

July 2017 – March 2021

### Software Engineer, eCozy Inc

October 2016 – February 2017

### Software Engineer, GlobalLogic Inc (Lviv, Ukraine)

September 2015 – October 2016

### Researcher, Karazin KNU

January 2013 – May 2020

### System Administrator, Ukrnames LLC

January 2012 – January 2013



## PROJECTS

### Technical Lead, Pet Mask

Jun 2022 – Present

**Description:** Mobile demo application for cat face and face landmarks detection to apply filter mask. Entertainment video processing system for projecting 3d objects onto pet's head.

**Responsibilities:** Leading a team of three CV developers

**Technologies:** Python, TensorFlow, OpenCV, Face3D

### Lead Computer Vision Engineer

Sep 2021 – Feb 2022

**Description:** Startup in the domain of lip sync and deep fake.

**Responsibilities:** Supervised and Personalized HQ LipSync R&D. Facial landmark detection. Object detection with R-CNN. Edge computing optimizations (iOS/Android) for real time LipSync. GCP infrastructure architecture and supporting. Time series prediction model with LSTM. TensorFlow vs PyTorch investigation.

**Technologies:** Python, C++, TensorFlow, Keras, OpenGL, ctypes, GCP, PyTorch

### Technical Lead

Mar 2021 – Sep 2021

**Description:** A set of pre-sales in domain of mapping, sensor fusion and 3d reconstruction.

**Responsibilities:** Object detection with R-CNN/ FasterR-CNN. Image segmentation and object detection. Analytical work with formulas and math models. 3D reconstruction with SLAM from RGBD images. Camera calibration/autocalibration with MVG methods

**Technologies:** TensorFlow OD API, Keras, Pytorch, Python, CVAT

### Professor Assistant, Academic projects

May 2020 – Ongoing

**Description:** Academic work at a university and science researchers in a lab.

**Responsibilities:** Analytical work with formulas and math models. Developing of electromagnetic theory.

**Technologies:** Python, C++, OpenCV, Keras, ctypes

### Senior Software Engineer

Feb 2019 – Mar 2021

**Description:** R&D of market-leading automotive vehicle.

**Responsibilities:** Object detection with TensorFlow OD API. TFv1 to TFv2 migration.

Classification of dataset with XGBoost. Analytical work with formulas and math models. Camera calibration/autocalibration with MVG methods. 3D reconstruction with SLAM from RGBD images. Pipeline optimization with Tensor RT and ONNX.

**Technologies:** Python, C++, NVTX, TensorRT, CVAT, TensorFlow, ctypes

### Software Engineer

Jul 2017 – Nov 2018

**Description:** A set of outsource projects in domain of image classification / segmentation.

**Responsibilities:** PoC prototyping based on CNN image processing. Image segmentation. High load application development with C++.

**Technologies:** Python, OpenCV, TensorFlow/Keras, C++, TensorFlow Lite, Qt



## Software Engineer

Oct 2016 – Feb 2017

**Description:** Startup in domain of object tracking with edge computing.

**Responsibilities:** Developing of dashcam with active tracking of vehicles .

**Technologies:** C++, OpenCV, CMake

## Software Engineer

Sep 2015 – Oct 2016

**Description:** A set of outsource embedded projects in cutting edge domains.

**Responsibilities:** Development of firmware for IoT network router. Development of smart parking monitoring system.

**Technologies:** Embedded C, C++, OpenCV, SQL, Bash, CMake

## Researcher, Academic projects

Jan 2013 – May 2020

**Description:** Academic work at a university and science researchers in a lab.

**Responsibilities:** Analytical work with formulas and math models. Developing of electromagnetic theory. Antenna synthesizing and modeling. Development of software for numerical simulations.

## System Administrator, Models rewriting

Jan 2012 – Jan 2013

**Description:** Web hosting and domain name registry organization.

**Responsibilities:** System Administration and Client Support.

**Technologies:** DNS (bind), TCP/IP, KVM, XEN, GNU/Linux, Gentoo, LAMP, CMS (Joomla, Wordpress, Drupal), Python, Bash, RAID, LVM, Iptables, squid, OpenVPN, Jenkins, Gerrit

## PET PROJECTS, AND OTHER IMPACT

### Significant publication

- Several personal and team patents
- 10+ international conference thesis with SCOPUS impact
- R. Akhmedov, "Neural Radio in DS-UWB IoT Applications", 2020 IEEE Ukrainian Microwave Week (UkrMW), 2020, pp. 1073-1078
- R. Akhmedov, O. Dumin, V. Katrich "Impulse radiation of antenna with circular aperture" Telecommunications and Radio Engineering, vol. 77, pp. 1767-1784, (2018)

### UWB-SP Simulation Software

- Transient electromagnetic field simulation
- library-type software with POSIX computability
- High performance parallel distributed computation
- Interruptible computation with controllable progress
- Python interface for C++ software with ctype
- Flexible Cmake build system
- Implementation of EM simulators in time domain: FDTD, nonlinear evolution approach, MMO
- Data exporting as TensorFlow dataset



## **Smart Surveillance Camera**

- Works with Apple HomeKit (no certification)
- Works with most of IP camera aggregators
- FFmpeg multiuser video stream
- Up to 5 parallel video streams
- Motion sensor based on computer vision algorithms
- Configurable motion sensor
- Image depth estimation mode with single RGB camera

## **Autonomous Surveillance Bot**

- SLAM from couple of RGB cameras
- Autocalibration for compass in 3D environment
- 3D vectorized model of environment as output
- Motion and anomaly detection in selected environment
- Automatic finding and wiring with doc station module
- Target hunt and tracking
- Wi-Fi and Cellular wireless interfaces
- TTY-USB debug interface

## **EDUCATION**

**Postgraduate PhD research program attendance, Universidad de Murcia, Murcia, Spain**  
2017

**PhD in Phys & Math, National Transport University**  
2010-2020,

