Dr. Alexey Abramov

Personal details

Date and place of birth	17.05.1985 in Moscow, Russia
Citizenship	Germany, Russian Federation (dual citizenship)
Marital status	married, one child
Home page	`https://salzi.blog`
GitHub	`https://github.com/aabramovrepo`

Languages

Russian	native speaker
German	fluent
English	fluent

Professional career

10/2023 - present	**Senior Software Engineer** / CARIAD, VW Group, Munich, Germany
Role	Technical architect of the online map generation team (mapless driving)
Project	Automated Driving Alliance (CARIAD & Bosch)
Topics	ML/DL for mapless driving
	ML for behavior prediction
07/2022 - 09/2023	**Senior Software Engineer** / Argo AI, Munich, Germany
Project	Autonomy: self-driving cars
Topics	ML for behavior prediction
	LiDAR perception (for CARIAD after Argo was disbanded)
	Coordination of behavior prediction work packages with CARIAD (after Argo was disbanded)
01/2021 - 06/2022	**AI / CV Engineer** / Continental ADC, Munich, Germany

Project	Reference Data for Advanced Driver Assistance Systems
Topics	Computer vision, DL
05/2015 - 12/2020	**Software Development Engineer** / Continental Teves AG, Frankfurt am Main / Munich, Germany
Projects	Automated Driving, Cruising Chauffeur
Topics	Online road modeling using sensor fusion
	Lane perception with a high-resolution camera
	DL for visual recognition: lane detection, enhanced environment modeling
05/2013 - 04/2015	**Software Development Engineer** (external) / Continental Teves AG, Frankfurt am Main / Munich, Germany
Project	Automated Driving (BMW & Continental)
Topics	Lane perception with a high-resolution camera
	Enhanced environment modeling
07/2012 - 04/2013	**Research Assistant** / **PostDoc** at the Georg-August Universität Göttingen, Germany
Area of research	Computer vision and ML
Topics	Video segmentation
	Modeling leaf growth using stereo image sequences
04/2008 - 07/2012	**Research Assistant** / **PhD Student** at the Georg-August Universität Göttingen, Germany
Area of research	Computer vision and ML
Topics	Video segmentation, object recognition, object tracking

Computer skills

Operating systems	Linux, Windows
Development	Python, C++, Nvidia CUDA (basic knowledge)
Version control	Git, GitHub, DVC
Usage	OpenCV, PyTorch, TensorFlow, Caffe, Point Cloud Library (PCL), Boost, OpenMP, Qt, ROS, NumPy, SciPy, Matplotlib, scikit-learn, pandas, pytest

Open source

2020	image-statistics-matching
	`https://github.com/continental/image-statistics-matching`

Dissertation

04/2008 - 07/2012	**PhD in Computer Science**
	Georg-August Universität Göttingen, Germany
Supervisors	Prof. Dr. Florentin Wörgötter, Dr. Babette Dellen

Doctoral thesis	"Compression of visual data into symbol-like descriptors in terms of a cognitive real-time vision system" (Final grade: magna cum laude)

Studies

09/2002 - 02/2008	**MSc and BA in Computer Science**
	National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia
Graduation	graduate engineer
Field	Computers, complex computer operations, systems and networks
Specialization	High-performance computer systems and technologies
Topic of the diploma thesis	"Detection and tracking of moving objects in the camera field of view" (Final grade: excellent)

Participation in EU research projects

IntellAct	Intelligent Observation and Execution of Actions and Manipulations
Xperience	Robots bootstrapped through Learning from Experience
GARNICS	Gardening with a Cognitive System
PACO-PLUS	Perception, Action and Cognition through Learning of Object-Action Complexes

Review of scientific papers

IEEE International Conference on Robotics and Automation (ICRA)

IEEE Transactions on Image Processing

Research / development experience

Computer vision and image processing

ML/DL for perception and behavior prediction

Automated driving, self-diving cars

Robotics

Camera-based lane detection for automated driving

Image / video segmentation and object tracking

Replicating human actions with robots

Real-time computer vision systems

Parallel computing and architectures

List of publications

Conferences (selected)

Abramov, A.[§], **Bayer, C.**[§], **Heller, C.**[§] ([§] - equal contribution) Keep it Simple: Image Statistics Matching for Domain Adaptation. Scalability in Autonomous Driving, CVPR workshop, Seatlle, USA, June 16-18, 2020.

Abramov, A.[§], **Bayer, C.**[§], **Heller, C.**[§], **Loy, C.**[§] ([§] - equal contribution) A Flexible Modeling Approach for Robust Multi-Lane Road Estimation. IEEE Intelligent Vehicles Symposium (IV), Redondo Beach, CA, USA, June 11-14, 2017.

Abramov, A.[§], **Bayer, C.**[§], **Heller, C.**[§], **Loy, C.**[§] ([§] - equal contribution) Multi-Lane Perception Using Feature Fusion Based on GraphSLAM. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Daejeon, Korea, October 9-14, 2016.

Papon, J., Abramov, A., Schoeler, M., Wörgötter, F. Voxel Cloud Connectivity Segmentation - Supervoxels for Point Clouds. Computer Vision and Pattern Recognition (CVPR), Portland, USA, June 23-28, 2013.

Papon, J., Abramov, A., Wörgötter, F. Occlusion Handling in Video Segmentation via Predictive Feedback. ARTEMIS workshop in conjunction with European Conference on Computer Vision (ECCV), Firenze, Italy, October 13, 2012.

Abramov A., Papon, J., Pauwels, K., Wörgötter, F., Dellen, B. Depth-supported real-time video segmentation with the Kinect. IEEE workshop on the Applications of Computer Vision (WACV 2012), Breckenridge, Colorado, USA, January 9-11, 2012.

Abramov A., Aksoy, E.E., Dörr, J., Pauwels, K., Wörgötter, F., Dellen, B. 3D Semantic Representation of Actions from efficient stereo-image-sequence segmentation on GPUs. Fifth International Symposium on 3D Data Processing, Visualization and Transmission (3DPVT 2010), Paris, France, May 17-20, 2010.

Aksoy, E.E., Abramov, A., Wörgötter, F., Dellen, B. Categorizing Object-Action Relations from Semantic Scene Graphs. IEEE International Conference on Robotics and Automation (ICRA 2010), Alaska, USA, May 3-8, 2010.

Journals

Aksoy, E.E., Abramov A., Wörgötter, F., Scharr, H., Fischbach, A., Dellen, B. Modeling leaf growth of rosette plants using infrared stereo image sequences. Computers and Electronis in Agriculture, 110, 78-90, 2015.

Abramov, A., Pauwels K., Papon, J., Wörgötter, F., Dellen, B. Real-time Segmentation of Stereo Videos on a Portable System with a Mobile GPU. IEEE Transactions on Circuits and Systems for Video Technology, 22(9), 1292-1305, 2012.

Aksoy, E.E., Abramov A., Dörr, J., Ning, K., Dellen, B., Wörgötter, F. Learning the semantics of object-action relations by observation. International Journal of Robotics Research (IJRR), Special Issue on Semantic Perception for Robots in Indoor Environments, 30:1229-1249, 2011.

Talks

12/2019 **Advanced Environment Modeling for Assisted and Automated Driving**, Computer Vision and Deep Learning for Autonomous Driving seminar (invited talk), Technical University of Munich.

04/2018 **Advanced Environment Modeling for Autonomous Driving**, Walt Disney Imagineering, Pasadena (Los Angeles), USA.

10/2017 **AI Driven Environment Modeling for Autonomous Driving on Nvidia Drive PX2**, NVIDIA GPU Technology Conference Europe, Munich, Germany.

07/2016 **Perception of Multiple Lanes using Data Fusion**, MIT Lincoln Laboratory Beaver Works Center (summer program), Boston, Massachusetts, USA.

05/2012 **Real-Time Modular Cognitive Vision System**, NVIDIA GPU Technology Conference (GTC), San Jose, California, USA.