



# Alexey Abramov

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## Personal details

Date and place of birth 17.05.1985 in Moscow, Russia  
Citizenship Russian Federation  
Residential status permanent German residence permit  
Marital status single  
Home page <https://salzi.blog>  
GitHub <https://github.com/aabramovrepo>

## Languages

Russian native speaker  
German fluent  
English fluent

## Professional career

1/2021 - present **AI / CV engineer** / Continental ADC, Munich, Germany  
Project Reference Data for Advanced Driver Assistance Systems

5/2015 - 12/2020 **Development engineer environment model** / Continental Teves AG, Frankfurt am Main / Munich, Germany  
Projects Automated Driving, Cruising Chauffeur  
Topics Algorithms and camera-based systems for autonomous vehicles  
Lane perception using a high-resolution camera  
Online road modeling using sensor fusion  
Deep learning for lane perception, enhanced environment modeling  
Domain adaptation for object detection

5/2013 - 4/2015 **Development engineer environment model** / Bertrandt Ingenieurbüro GmbH, Munich, Germany  
Project Automated Driving (BMW & Continental)

Topics Lane perception using a high-resolution camera  
Enhanced environment modeling

7/2012 - 4/2013 **Research assistant / PostDoc** at the Georg-August Universität Göttingen, Germany

Area of research Computer vision and machine learning

Topics Video segmentation  
Modeling leaf growth using stereo image sequences

4/2008 - 7/2012 **Research assistant / PhD Student** at the Georg-August Universität Göttingen, Germany

Area of research Computer vision and machine learning

Topics Video segmentation, object recognition, object tracking

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## Software / Tools

Operating systems Linux, Windows

Development Python, C++11-17, Nvidia CUDA

Version control Git, GitHub, DVC

Libraries OpenCV, Point Cloud Library (PCL), Boost, ROS, Qt, NumPy, SciPy, Matplotlib, Open3D, seaborn

Deep learning frameworks PyTorch, Tensorflow, Caffe

Testing tools pytest, Catch2, GoogleTest

Machine learning scikit-learn, scikit-image, pandas

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## Open source

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

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## Dissertation

4/2008 - 7/2012 **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)

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## Studies

9/2002 - 2/2008 **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)

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## 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

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## Review of scientific papers

IEEE International Conference on Robotics and Automation (ICRA)  
IEEE Transactions on Image Processing

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## Research / Software engineering experience

Computer vision and image processing  
Artificial intelligence, deep learning, machine learning  
Autonomous driving, environment modeling  
Camera-based road marking and lane detection  
Image / video segmentation and object tracking  
Stereo vision  
Python / C++ software development  
Real-time computer vision systems  
Image domain adaptation  
Robotics

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## List of publications

### Conferences (selected)

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

**Abramov, A.<sup>§</sup>, Bayer, C.<sup>§</sup>, Heller, C.<sup>§</sup>, Loy, C.<sup>§</sup>** (§ - 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.<sup>§</sup>, Bayer, C.<sup>§</sup>, Heller, C.<sup>§</sup>, Loy, C.<sup>§</sup>** (§ - 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 Electronics 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.

### PhD Thesis

**Abramov A.** Compression of visual data into symbol-like descriptors in terms of a cognitive real-time vision system, Georg-August-Universität Göttingen, Germany 2012.

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## Invention Disclosures

**Bayer, C., Heller, C., Loy, C., Abramov, A.** Method and Device for Detecting Lanes, Driver Assistance System and Vehicle, US20200410256A1, 2020.

**Loy, C., Heller, C., Abramov, A., Bayer, C.** Method for Automatically Establishing Extrinsic Parameters of a Camera of a Vehicle, US10552982B2, 2020.

**Abramov, A., Aksoy, E.E., Dellen, B., Wörgötter, F.** Public law foundation of the Georg-August Universität Göttingen, Method and Device for Estimating Development Parameters of Plants, WO 2013083146 A1, 2013.

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## Talks

- 12/2018 **Advanced Environment Modeling for Assisted and Automated Driving**, Computer Vision and Deep Learning for Autonomous Driving seminar (invited talk), Technical University of Munich, Germany
- 12/2018 **Advanced Lane Perception, Fusion and Modeling for Autonomous Driving**, Auto.AI, Berlin, Germany.
- 4/2018 **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.
- 7/2016 **Perception of Multiple Lanes using Data Fusion**, MIT Lincoln Laboratory Beaver Works Center (summer program), Boston, Massachusetts, USA.
- 5/2012 **Real-Time Modular Cognitive Vision System**, NVIDIA GPU Technology Conference (GTC), San Jose, California, USA.

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## Hobbies

Bicycle, jogging, swimming, skiing, hiking, traveling

Football, foosball

Reading, art