

SUMMARY: Research scientist with experience in machine learning, deep neural networks, intelligent transportation, and software development in Java, Kotlin, Python, PyTorch, TensorFlow, and Android.

EDUCATION

- 2014–2018** **St. Petersburg Federal Research Center of the Russian Academy of Sciences (SPC RAS), ITMO University**, St. Petersburg, Russia.
GPA: 4.45/5.0
Ph.D. in Computer Science, 2019.
Thesis title: “Development of models and algorithms for distributed system of prevention of traffic accidents based on monitoring driving behavior”.
Advisors: Prof. Vladimir Parfenov, Dr. Alexey Kashevnik.
- 2008–2014** **ITMO University**, St. Petersburg, Russia
GPA: 4.87/5.0 *Department of Informational Technologies and Programming*
B.S. & M.S. in Computer Science (Summa Cum Laude)

WORK EXPERIENCE

- University of Hawaii at Manoa, Honolulu, HI, USA** **10/2021–Present**
Civil and Environmental Engineering, Research Assistant
- Develop theoretical models for connected vehicle system operations and validate these models using the real-time sensor data in the State of Hawaii
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- St. Petersburg Federal Research Center of the RAS, Russia** **06/2016–Present**
Laboratory of Computer-Aided Integrated Systems, Research Assistant
- *Research interests:* computer vision, deep neural networks, intelligent transportation systems.
 - Published ([Scopus](#)) and reviewed research papers, wrote grant proposals, planned and conducted experiments, presented scientific results to colleagues, and at Russian and international conferences.
 - Reviewed manuscripts in Transportation Research Part C Journal, Intelligent Transportation Systems.
 - Taught “Knowledge management” class for Master’s students, ITMO University, 2018-2020.
 - Developed a mobile [Drive Safely](#) assistant application for Android (*10,000+ installs*) providing actionable information to a driver on how to prevent a road accident. The assistant monitors driver behavior, recognizing drowsiness and distraction, in real-time in vehicle cabin using smartphone camera and sensors, driver profile, and user preferences. The application provides audible alerts and context-based recommendations for a driver to avoid possible traffic accident. Neural networks are employed to extract the driver’s facial features (eye openness, head pose, mouth openness). Application is written in Java, Kotlin, C++ with OpenCV, TensorFlow.
 - Assembled cross-platform module of driver assistant for dangerous state determination (Java, Kotlin, C++) packed in JAR file and adapted it for use in Android and embedded system-on-module [Nvidia Jetson Nano](#).
 - Developed cloud platform and API for processing driving statistics (driver profile, contextual information) using PHP, SQL, OAuth, REST, Postgres, Json, gzip. Improved compression of uploading driving statistics by 60%.
- Yandex LLC, St. Petersburg, Russia** **2013–2017**
Department of machine translation, Software Engineer
- Developed mobile translator clients for [Android](#) (*10,000,000+ installs*) and [Windows Phone](#) for [Translator Service](#) at [Yandex](#) (it is the most popular search engine in Russia – “the Russian Google”):
- Implemented simultaneous full-text translation with dictionary information, predictive typing to replace the existing native suggestions, Android Wear support with speech-to-text function.
 - Integrated on-device offline translation with downloadable language packages with JNI interfaces in Java.
 - Allowed users to translate entire websites in the application utilizing the WebView component.
 - Integrated clipboard translation via system contextual menu, text-to-speech for speaking translation, translation text from images, and native- and cloud-based voice recognition.
 - Increased code coverage by 40% utilizing JUnit/Robolectric frameworks to test and SonarQube to inspect code quality.
 - Gained experience working in a distributed team.
- Arkhangelsk Regional Institute of Open Education, Russia** **2010–2011**
IT department, Software Engineer
- Designed and developed training program for tutors from scratch using 1C-Bitrix CMS.
- Northern (Arctic) Federal University, Arkhangelsk, Russia** **2008–2009**
IT department, .NET Developer
- Developed and optimized SQL queries to manage activity of academic staff using MSSQL and C#.

RECENT PUBLICATIONS

- A. Kashevnik, **I. Lashkov**, A. Axyonov, D. Ivanko, D. Ryumin, A. Kolchin, A. Karpov [Multimodal Corpus Design for Audio-Visual Speech Recognition in Vehicle Cabin](#) // IEEE Access, 2021 (Q1).
- A. Kashevnik, A. Ali, **I. Lashkov**, N. Shilov, [Seat Belt Fastness Detection Based on Image Analysis from Vehicle In-Cabin Camera](#), 26th Conference of Open Innovations Association, Russia, 2020, pp. 143-150.
- A. Kashevnik, A. Ali, **I. Lashkov**, D. Zubok. [Human Head Angle Detection Based on Image Analysis](#). In: Proceedings of the Future Technologies Conference, vol. 1, pp. 233-242, 2020.
- A. Kashevnik, **I. Lashkov**, A. Ponomarev, N. Teslya, A. Gurtov, [Cloud-Based Driver Monitoring System Using a Smartphone Mounted on a Vehicle Windshield](#) // *IEEE Sensors Journal*, vol. 20(12), pp. 6700-6715, 2020, Q1.
- **I. Lashkov**, A. Kashevnik, N. Shilov, [Dangerous State Detection in Vehicle Cabin Based on Audiovisual Analysis with Smartphone Sensors](#). In: *Intelligent Systems and Applications*. vol. 1250, pp. 789-799, 2020.
- **I. Lashkov**, A. Kashevnik, N. Shilov, V. Parfenov, A. Shabaev, [Driver Dangerous State Detection Based on OpenCV & Dlib Libraries Using Mobile Video Processing](#), In: *2019 IEEE International Conference on Computational Science and Engineering (CSE)*, New York, NY, USA, 2019, pp. 74-79.
- A. Kashevnik, **I. Lashkov**, D. Ryumin, A. Karpov, [Smartphone-Based Driver Support in Vehicle Cabin: Human-Computer Interaction Interface](#). In: Ronzhin A., Rigoll G., Meshcheryakov R. (eds) *Interactive Collaborative Robotics. ICR 2019. Lecture Notes in Computer Science*, vol. 11659, Springer, 2019, pp. 129-138.
- **I. Lashkov**, A. Kashevnik. [Smartphone-Based Intelligent Driver Assistant: Context Model and Dangerous State Recognition Scheme](#). In: *IntelliSys 2019: Intelligent Systems and Applications*, vol. 1038, 2020, pp. 152-165.
- A. Kashevnik, **I. Lashkov**, A. Gurtov. [Methodology and Mobile Application for Driver Behavior Analysis and Accident Prevention](#) // *IEEE Transactions on Intelligent Transportation Systems*, 2019, pp. 1-10 (Q1).

PATENTS

- Mobile service to prevent dangerous situation prevention and generate recommendations for a driver while driving using front-facing camera and smartphone sensors (Drive Safely) // A. Smirnov, A. Kashevnik, **I. Lashkov** # 2017614256 from April 10, 2017 ([Rospatent](#)).
- Driving dangerous state determination on public roads based on the use of monitoring situation inside the vehicle cabin. Inventor: SPIIRAS. Authors: **I. Lashkov**, A. Kashevnik, A. Smirnov, # [RU2 703 341C1](#).

TECHNICAL SKILLS

- Programming languages: Java, Kotlin, Python, SQL, HTML/CSS.
- API / Software: Android SDK, Retrofit, Firebase, Crashlytics SDK, REST API, Google OAuth, Protégé, XML, Json, OWL, TeamCity, SonarQube, Gradle, Git, Sqlite, JUnit, Jupyter Notebook, TensorFlow, TPU, PyTorch.

RECENT HOME PROJECTS

- [Kaggle](#) competitions. I took part in different Kaggle competitions related to image analysis and got awarded for top competitions results with Gold, Silver and Bronze medals.
- [HippoYD](#). Mouth Openness classifier build using the DNN model that predicts whether the mouth is opened or closed. Underneath, it uses Python and TensorFlow.
- [TFProfiler](#). Platform to profile TensorFlow Lite models and measure its performance using FPS, model initialization time, model inference time, memory consumption on Android smartphone with different delegates.

ACHIEVEMENTS & AWARDS

- 2021–22 [Kaggle](#) – **Gold** medal in “[Image Matching Challenge 2022](#)”, “[RSNA-MICCAI Brain Tumor Radiogenomic Classification](#)”; **Bronze** medal in “[Happywhale - Whale and Dolphin Identification](#)”.
- 2019 **Winner** at the [final stage](#) of **Enel call** for innovative projects in Rome, Italy (selected **1 in 200**).
- 2019 **Travel Grant**, St. Petersburg Institute for Informatics and Automation.
- 2018 **Grant** of the program competition **UMNIK** (Member of the Youth Research and Innovation Competition) in St. Petersburg and Leningrad region.
- 2017,2018 **Best Demo** awards at 21th, 22th FRUCT Conference, and from Sensors journal.
- 2016,2017 **Diploma for the best report** in the IV,V All-russian Interacademic congress of young scientists held by ITMO University.
- 2016 **Scholarship** of Committee on Science and Higher Education of Russian Government, St. Petersburg.
- 2015 **Distinguished participant** in Microsoft Russia Summer School on “Machine learning and Intelligence” held at St. Petersburg.
- 2014 **1st place** in programming contest on the most original and best solution in Microsoft School on "Doing Research in the Cloud 2014" held at Moscow State University.