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Igor Lashkov

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SUMMARY: Researcher with 4+ years of experience in ontologies, context-aware, knowledge management, intelligent transportation systems, and 8+ years of software development in Java, Kotlin, Python, Android, SQL.

EDUCATION

- 2014–2018** **St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (SPIIRAS)**, St. Petersburg, Russia
GPA: 4.45/5.0 **ITMO University**, St. Petersburg, Russia
Ph.D. in Computer Science
Thesis title: “Development of models and algorithms for distributed system of prevention of traffic accidents based on monitoring driving behavior”
Advisors: Prof. Vladimir Parfenov, Prof. Alexander Smirnov
- 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

- St. Petersburg Institute for Informatics and Automation**, Russia **03/2016–Present**
Laboratory of Computer Aided Integrated Systems, Senior Researcher
- *Research interests:* mobile services, driving assistant systems, ontologies, context-aware systems, recommendation systems, intelligent transportation systems.
 - Published ([Scopus](#)) and reviewed research papers, developed 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.
 - Teaching experience in “Knowledge management” for bachelor students, ITMO University, 2018-2019.
 - Developed mobile [Drive Safely](#) assistant application for Android (*10,000+ installs*) providing actionable information to a driver how to prevent a road accident. The assistant monitors abnormal driver behavior, recognizing drowsiness and distraction, in real-time in vehicle cabin using data from smartphone camera and sensors, driver profile, and user preferences. The application provides audible alerts and context-based recommendations for a driver to help avoid possible traffic accident. Face recognition methods are utilized to extract the driver’s facial features (eye’s state, head pose, mouth openness) to determine dangerous driving behavior. Application is written in Java, Kotlin, C++ with Dlib and OpenCV libraries.
 - Built cross-platform module of driver assistant for dangerous state determination (JNI, Java, 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”):
- Developed 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 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#.

LANGUAGE SKILLS: English, Russian.

RECENT PUBLICATIONS

- 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, Q1, 2020.
- **I. Lashkov**, A. Kashevnik, N. Shilov, Dangerous State Detection in Vehicle Cabin Based on Audiovisual Analysis with Smartphone Sensors. In: *Intelligent Systems and Applications*. IntelliSys, 2020 (Accepted).
- **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**, [Intelligent Driver Decision Support System in Vehicle Cabin: Reference Model for Dangerous Events Recognition and Learning](#), In: 2019 IEEE 15th International Conference on Control and Automation (ICCA), Edinburgh, United Kingdom, 2019, pp. 27-31.
- A. Kashevnik, **I. Lashkov**, N. Teslya, [Driver Intelligent Support System in Internet of Transportation Things: Smartphone-Based Approach](#). In: IEEE Conference System of Systems Engineering, USA, 2019, pp. 170-175.
- 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, A. Ronzhin. [Ontology-based Personalisation for Online Driver Monitoring by Smartphone](#), Comptes rendus de l'Academie bulgare des Sciences, vol. 72, no. 5, 2019, pp. 650-657.
- **I. Lashkov**, A. Kashevnik. [Smartphone-Based Intelligent Driver Assistant: Context Model and Dangerous State Recognition Scheme](#) // *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*, Q1, 2019, pp. 1-10.

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](#).

PROJECTS

- [Covid19-info-skill](#). Skill for voice assistant Alice to provide statistics about 2019-nCoV, written in Python.
- [Ferris-Wheel](#). An Android library to present an animated ferris wheel, written entirely in Kotlin.
- [Spellah](#). A spell checking project for Microsoft Research Summer School. It is based on n-gram statistics obtained from the search engines. Primary data provider is the Microsoft Web N-Gram service. Spellah is built using Node.js and HTML5, and is deployed on Windows Azure using Github integration, Redis cache.

TECHNICAL SKILLS

- Programming languages: Java, Kotlin, Python, SQL, HTML/CSS.
- API / Software: Android SDK, DI (Dagger), Retrofit, Firebase, Crashlytics SDK, REST API, Google OAuth, Protégé, XML, Json, OWL, TeamCity, SonarQube, Gradle, Git, BitBucket, Sqlite, ClickHouse, JUnit.

ACHIEVEMENTS & AWARDS

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| 2019 | Winner at the final stage of Enel call for innovative projects in Rome, Italy (selected 1 in 200). |
| 2019 | Best Demo award for <i>Cloud-oriented Intelligent Driver Support system: Dangerous States Recognition in Vehicle Cabin and Recommendation Generation</i> , 24th FRUCT Conference. |
| 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 for <i>Dangerous Events Identification and Recommendations Generation for a Vehicle Using a Personal Smartphone</i> , 21th FRUCT Conference; <i>Drive Safely: Mobile Application and Statistics Analyzing Service</i> , 22th FRUCT Conference and 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. |

INTERESTS: Cycling, swimming, soccer, yoga, meditation.