

Dr. Konstantin Selyunin

Curriculum vitae



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📁 selyunin.github.io

🌐 github.com/selyunin

Education

- 12.2017 **Dr.technn.**, *Technische Universität Wien (TU Wien)*, Vienna, Austria,
- 10.2012 Neural Models for Monitoring and Control with Applications in Automotive Domain.
 - PhD thesis with distinction: excellent score for the written thesis and defense presentation
 - The research results presented: CDC'15, DATE'16, DVCON'16, DAC'16, RV'16, CAV'17
- 08.2010 **Dipl.Ing.**, *Omsk State Transport University*, Omsk, Russia, *with Distinction*.
- 09.2005 Speciality: "Automation remote control and communications on railway transport". Major "Microprocessor- and information control systems".

Experience

- 12.2021 **Development Engineer**, *Robert Bosch AG*, Vienna, Austria.
- 04.2019
 - Developed prototype implementation for BMW integration platform on ARM R-52
 - Automated processing of SW deliveries, build automation, CI/CD, debugger scripting
 - Concept work and prototype implementation for AUTOSAR CPFlex standard
- 03.2019 **Software Engineer**, *Zeno Track GmbH*, Vienna, Austria.
- 01.2018
 - Developed multi-sensor indoor localization system based on Kalman filter on Yocto Linux;
 - Implemented ARM Cortex M3 firmware for sensor communication, power, health monitoring;
 - Increased localization accuracy up to 20% by integrating IMU in the system;
 - Automated long-term product evaluation tests, created hardware / software setup.
- 12.2017 **Project Assistant**, *Technische Universität Wien (TU Wien)*, Vienna, Austria,
- 11.2014 **Hardware Monitoring for Automotive (HARMONIA)** 845631 FFG project.
 - Implemented monitors in FPGA for checking sensor data against specifications in Signal Temporal Logic and Timed Regular Expressions
 - Applied High-Level Synthesis for synthesizable monitor generation in FPGA
 - Runtime monitors during chip simulation and synthesizable in FPGA
- 09.2012 **University Assistant**, *Omsk State Transport University*, Omsk, Russia.
- 09.2010 Teaching assistant for the "Foundations of Microprocessor Technology" course.
 - Preparing course content, labs, supervising students.

Technical skills

Programming languages: C, C++, Python, R, MATLAB, VHDL, groovy

Operating Systems: Linux, Windows

Robotic frameworks: ROS, MoveIt

Embedded systems: Zynq, Yocto, Cortex-M NXP LPC, STM32 MCU, System C

Deep Learning Libraries: TensorFlow, Keras

IDEs: Eclipse, Vivado, PyCharm, CLion, MCU Xpresso, Qt Creator

Text typesetting: vim, L^AT_EX, MS Office, reStructuredText

Bugtracking systems: Jira, Redmine, YouTrack

PAAS, IAAS, CI: Amazon EC2, S3, Travis-CI, GitLab, CircleCI, jenkins, Artifactory

Languages

English	Fluent	Full professional proficiency
German	Fluent	C1 certificate
Russian	Fluent	Mother language

Publications

- [NBN⁺16] Thang Nguyen, Ezio Bartocci, Dejan Nickovic, Radu Grosu, Stefan Jaksic, and Konstantin Selyunin. The HARMONIA Project: Hardware Monitoring for Automotive Systems-of-Systems. In *Proc. of Leveraging Applications of Formal Methods, Verification and Validation: Discussion, Dissemination, Applications - 7th International Symposium, ISoLA 2016, Corfu, Greece, October 10-14*, pages 371–379, 2016.
- [SJN⁺17] Konstantin Selyunin, Stefan Jaksic, Thang Nguyen, Christian Reidl, Udo Hafner, Ezio Bartocci, Dejan Nickovic, and Radu Grosu. Runtime Monitoring with Recovery of the SENT Communication Protocol. In *Proc. of the 29th International Conference on Computer Aided Verification, CAV 2017, Heidelberg, Germany, July 24-28*, pages 336–355, 2017.
- [SNB⁺16a] Konstantin Selyunin, Thang Nguyen, Ezio Bartocci, Dejan Nickovic, and Radu Grosu. Monitoring of MTL Specifications With IBM's Spiking-Neuron Model. In *Proc. of the 19th Design, Automation and Test in Europe Conference and Exhibition, DATE 2016, Dresden, Germany, March 14-18*, pages 924–929, 2016.
- [SNB⁺16b] Konstantin Selyunin, Thang Nguyen, Andrei Daniel Basa, Ezio Bartocci, Dejan Nickovic, and Radu Grosu. Applying High-Level Synthesis for Synthesizing Hardware Runtime STL Monitors of Mission-Critical Properties. In *Electronic Proc. of the 13th Design and Verification Conference and Exhibition, DVCon 2016, San Jose, CA, USA*, pages 1–8, 2016.
- [SNBG16] Konstantin Selyunin, Thang Nguyen, Ezio Bartocci, and Radu Grosu. Applying Runtime Monitoring for Automotive Electronic Development. In *Proc. of the International Conference on Runtime Verification, RV 2016, Madrid, Spain, Sept. 23-30, 2016*, pages 462–469, 2016.
- [SRB⁺15] Konstantin Selyunin, Denise Ratasich, Ezio Bartocci, Md. Ariful Islam, Scott A. Smolka, and Radu Grosu. Neural Programming: Towards adaptive control in Cyber-Physical Systems. In *Proc. of the 54th IEEE Conference on Decision and Control, CDC 2015, Osaka, Japan, December 15-18, 2015*, pages 6978–6985, 2015.

Conference presentations

- 2017 The 29th International Conference on Computer Aided Verification, (CAV 2017), Heidelberg, Germany
- 2016 The 16th RV conference and exhibition (RV 2016), Madrid, Spain
- 2016 The 53rd DAC conference and exhibition (DAC 2016), Austin, Texas, USA
- 2016 The 19th DATE conference and exhibition (DATE 2016), Dresden, Germany
- 2016 The 28th Design and Verification conference (DVCon 2016), San Jose, CA, USA
- 2015 The 54th IEEE Conference on Decision and Control (CDC 2015), Osaka, Japan

Additional Courses & Projects

2021	IMU visualization with PyQt and OpenGL	<i>hobby project</i>
2020	Smart mirror with Intel Realsense D435	<i>hobby project</i>
2019	AUTOSAR for Software Developers	<i>on-site course</i>
2019	BNO-USB-Stick Linux Python Communication Driver	<i>Python project</i>
2018	Model Predictive Control	<i>C++ project</i>
2018	Particle Filter for multi-sensors simulation	<i>C++ project</i>
2018	Unscented Kalman Filter / Extended Kalman filter	<i>C++ project</i>
2017	Traffic Sign Recognition with Convolutional Neural Network	<i>Python project</i>
2017	Lane Lines Detection with OpenCV	<i>Python project</i>
2017	Cyton Gamma 300 & Movelt: Demo	<i>ROS project</i>
2016	Xilinx High-Level Synthesis, CoreVision, Heesch, The Netherlands	<i>on-site course</i>
2015	Internet of Things, University of California, San Diego	<i>online course</i>
2014	Linear and Integer Programming, University of Colorado Boulder	<i>online course</i>
2014	Functional Programming Principles in Scala, ÉPFL	<i>online course</i>
2014	Machine Learning, Stanford University	<i>online course</i>
2013	Software as a Service, BerkeleyX CS169.1x	<i>online course</i>
2013	Writing in the Sciences, Stanford Online	<i>online course</i>

Interests

Running, swimming, biking, chess, accordion, 3D