

Family name (surname): Mikhaylov

First (given) names: Konstantin

Date and place of birth: 23.07.1985, Leningrad, USSR

Citizenship: Russian Federation

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Education and degrees:

2006: Bachelor in Electric Engineering with the focus in radio engineering from Saint-Petersburg State Polytechnical University, Russia (*average grade 4.2 out of 5*).

2008: Master of Science in Electric Engineering with the focus in radio systems from Saint-Petersburg State Polytechnical University, Russia (*average grade 4.9 out of 5*).

Currently: Dr.Sc(Tech) student in the University of Oulu, Finland (*average grade for 13 completed graded courses is 4.6/5, studies are supervised by Dr.Sc.(Tech), Prof. Markku Juntti*)

Completed graduate projects:

B.Sc.: *Speech compressing methods (grade 5 out of 5)*

M.Sc.: *Methods for implementing FLL and PLL systems using FPGAs (grade 5 out of 5)*

Fields of research and research interests: wireless sensor and actuator networks(WSAN), embedded systems, energy efficient wireless communication, non-specific short range wireless communication technologies, wide area IoT/M2M communication, energy harvesting and optimization, wireless energy transfer, wireless localization, resource-constrained systems and applications

Language proficiency:

- Russian – native;
- English – fluent;
- German – advanced;
- Finnish – basic;

Professional appointments:

Current position:

Timeframe: *January 2014 - ...*

Position: Researcher at Centre of Wireless Communications (CWC), University of Oulu, Oulu, Finland

Responsibilities: I am conducting research in the field of wireless sensor networks and various wireless communication technologies (UWB, wide area IoT, energy efficient wireless). My major focus is on development and implementation of the novel trial platform solution (both hardware and embedded software) for the future WSA and Internet of Things and the various wireless communication technologies used in them. Also I am involved in planning and preparing the new research projects and supervision of B.Sc. and M.Sc. students.

Previous positions:

Timeframe: *August 2008 - December 2013*

Position: researcher for wireless and embedded systems in RFMedia Laboratory, Oulu Southern Institute (University of Oulu)/Centria R&D (Central Ostrobothnia University of Applied Sciences), Ylivieska, Finland

Responsibilities: I planned and conducted applied research and development work in the field of wireless & embedded systems. My main focus was on the non-specific short range wireless communication and wireless sensor and actuator networks. Over those years I have designed, prototyped in hardware and tested multiple different applications using various short-range wireless communication technologies (including, but not limiting to IEEE 802.11, IEEE 802.15.4, Bluetooth/Bluetooth Low Energy, proprietary) and different embedded systems (PIC, Atmel and TI microcontrollers and systems-on-chip; DSPs; FPGAs). The applications have been developed for the needs and in close cooperation with different partner companies from the Industry. Several of the developed prototypes are currently in different pre-production and production phases. As a part of my work I also supervised several BSc students during their internship. Two invention disclosures were made by me for the University of Oulu.

Timeframe: November 2006 - August 2008

Position: radio and embedded systems engineer at Federal State Unitary Enterprise Research-and-Production Association “Impulse” (Russian Federal Space Agency), St. Petersburg, Russian Federation

Responsibilities: I have participated in the development of ultra-long range adaptive long-wave communication system, being responsible for interfacing radio and a PC. I have designed and developed both the hardware and embedded software.

Foreign research visits:

<i>Country & organization</i>	<i>Timeframe</i>	<i>Purpose</i>
Japan, Yokohama, Yokohama National University	Sept. 2015- Dec. 2015	Study and experiments for wireless indoor localization using UWB technology.
South Korea, Gwangju, Gwangju Institute of Science and Technology	Jan. 2013- Mar. 2013	Knowledge transferring & studies related to capabilities and possible use of IEEE 802.15.4.

Professional skills:

I am able to plan and conduct research and development (R&D) in the fields related to Wireless and Embedded Systems. I have 8-year experience of planning the R&D work, designing, implementing and testing the prototypes of devices based on various embedded processors and radio technologies. I have extensive knowledge of the features of different embedded platforms & peripherals (e.g., sensors & actuators), the widely used wired (e.g., UART, SPI, I2C, 1-wire, JTAG) and wireless (e.g., IEEE 802.15.4(a), IEEE 802.11, Bluetooth/Bluetooth Low Energy(Smart), LoRa) interfaces. I can design a new or adapt the existing wireless communication protocols to the requirements of a particular application or scenario

Also I have extensive experience of network-level wireless simulations using OMNeT++ & MiXiM simulators (IEEE 802.15.4 & BLE protocols). I am able to plan and conduct experiments, and make measurements using different electronic measurement instrumentation, process and analyze the results. I have sufficient publication (first author for over 30 publications in the international forums, h-index: 6) and research results presentation experience (participated in about 15 international conferences, for four of those also served as the session chair). Also I have served as the reviewer for multiple conferences and journals, and supervised two BSc and two MSc students during their internship, and have acted as the second supervisor for one MSc student.

Programming skills:

- **C:** 10 years, extensive experience of developing embedded software applications for different embedded systems (especially - microcontrollers and systems-on-chip) with and without using embedded OSs.
- **C++:** 4 years experience of working with OMNeT++ network simulator and its extensions & developing PC applications.
- **Java:** basic knowledge – implemented the user interfaces for WSN terminals & data management applications
- **MATLAB (& Simulink):** 3 years experience of developing different data acquisition, analyzing and processing applications.
- **LabVIEW:** 1 year experience of designing applications for NI PCI-5640r.
- **Verilog:** 1 year experience of designing the applications for Altera FPGAs.
- **Pascal/Delphi:** 3 years experience of developing data processing applications
- **Javascript & HTML:** 1 year experience of web-development.
- **Assembly languages:** 1 year experience of developing applications for microcontrollers and DSPs.

Computer skills:

- I worked with PC for over 21 years, over those years got experience of computer assembling and maintenance, troubleshooting hardware and software problems, installing and configuring the peripherals, components, drivers and software.
- I worked with PCs both under Windows & Linux and excessively used virtual machines.
- I worked with Microsoft Office (Word, Excel, PowerPoint, and Visio), OpenOffice and LaTeX tools and different image editing software.

- I have sufficient knowledge of the following CAD and IDE systems: Eagle PCB, Eclipse, TI CCS, EWB, Microcap, OrCad, PCad, AutoCad, MathCad, MatLab, LabVIEW, Quartus, IAR 8051/MSP430 IDE, AVR studio, MPLAB, SL IDE

Professional associations' membership:

- ✓ member of Institute of Electrical and Electronics Engineers (IEEE);
- ✓ member of International Association of Engineers (IAENG).

Awards & achievements:

- Received 5000 EUR Nokia Scholarship research grant (2015)
- Obtained 22500 EUR funding for ITEE collaboration project from the University of Oulu (2015)
- Received 5000 EUR Nokia Scholarship research grant (2014)
- Best paper award at IEEE CogInfoCom'2014 conference

Selected academic publications:

- [1] O. Galinina, H. Tabassum, **K. Mikhaylov**, S. Andreev, E. Hossain and Y. Koucheryavy "On Feasibility of 5G-Grade Dedicated RF Charging Technology for Wireless-Powered Wearables", to appear in IEEE Wireless Communications.
- [2] **K. Mikhaylov**, T. Pitkäaho and J. Tervonen, "Plug-and-play Mechanism for Plain Transducers with Wired Digital Interfaces Attached to Wireless Sensor Network Nodes", International Journal of Sensor Networks (IF=1.386), Vol. 14, No. 1, 2013, pp. 50-63.
- [3] **K. Mikhaylov**, N. Plevritakis and J. Tervonen, "Performance Analysis and Comparison of Bluetooth Low Energy with IEEE 802.15.4 and SimpliCI", Journal of Sensor and Actuator Networks, Vol. 2, No. 3, 2013, pp. 589-613.
- [4] **K. Mikhaylov** and T. Hänninen, "Mechanisms for Improving Throughput and Energy Efficiency of Bluetooth Low Energy for Multi Node Environment", Journal of High Speed Networks, Vol. 21, Issue 3, 2015, pp. 165-180.
- [5] J. Petäjajarvi, M. Pettissalo, **K. Mikhaylov**, A. Roivainen and T. Hänninen, "On the Coverage of LPWANs: Range Evaluation and Channel Attenuation Model for LoRa Technology", in Proc. ITST'15, Dec. 2-4 2015, pp. 55-59.
- [6] **K. Mikhaylov**, J. Petäjajarvi, M. Mäkeläinen, A. Paatelma and T. Hänninen, "Extensible Modular Wireless Sensor and Actuator Network and IoT Platform with Plug&Play Module Connection", Proc. 14th ACM/IEEE International Conference on Information Processing in Sensor Networks, Apr. 13-16 2015, pp. 386-387.

Behavioral skills:

- Ability to learn;
- Analytical and problem solving skills;
- Self discipline, punctual, responsible.

Interests:

Work-related:

- energy efficient wireless;
- wireless sensor and actuator networks;
- robotics;
- energy harvesting techniques;
- resource-constrained systems optimization.

Hobbies:

- Military history;
- Scale modeling;
- Traveling;
- Eastern Asia;
- Gym;
- Photography.

Full list of publications¹:

Peer-reviewed journal papers:

Accepted:

[J8*] O. Galinina, H. Tabassum, **K. Mikhaylov**, S. Andreev, E. Hossain and Y. Koucheryavy "On Feasibility of 5G-Grade Dedicated RF Charging Technology for Wireless-Powered Wearables", accepted by IEEE Wireless Communications, (*JUFO ranking: 2*), Apr. 2016.

Published:

[J7] **K. Mikhaylov** and T. Hänninen, "Mechanisms for improving throughput and energy efficiency of Bluetooth Low Energy for multi node environment", Journal of High Speed Networks, Vol. 21, Issue 3, IOS Press, ISSN: 0926-6801 (*JUFO ranking: 1*), 2015, pp. 165-180.

[J6] O. Galinina, **K. Mikhaylov**, S. Andreev, A. Turlikov and Y. Koucheryavy, "Smart Home Gateway System over Bluetooth Low Energy with Wireless Energy Transfer Capability", EURASIP Journal on Wireless Communications and Networking, Springer, ISSN: 1687-1499 (*JUFO ranking: 1*), 2015, 2015:178.

[J5] J. Petäjälä, H. Karvonen, **K. Mikhaylov**, A. Pärssinen, M. Hämäläinen and J. Iinatti, "WBAN Energy Efficiency and Dependability Improvement Utilizing Wake-up Receiver", IEICE Transactions on Communications, Vol. E98-B, Issue 4, IEICE, ISSN: 1745-1345 (*JUFO ranking: 1*), 2015, pp. 535-542.

[J4] **K. Mikhaylov** and J. Tervonen, "Analysis and Evaluation of the Maximum Throughput for Data Streaming over IEEE 802.15.4 Wireless Networks", Journal of High Speed Networks, Vol. 19, Issue 4, IOS Press, ISSN: 0926-6801 (*JUFO ranking: 1*), 2013, pp. 181-202.

[J3] **K. Mikhaylov**, T. Pitkaaho and J. Tervonen, "Plug-and-play Mechanism for Plain Transducers with Digital Interfaces Attached to Wireless Sensor Network Nodes", International Journal of Sensor Networks, Vol. 14, Issue 1, Inderscience, ISSN: 1748-1287 (*JUFO ranking: Level 1*), 2013, pp. 50-63.

[J2] **K. Mikhaylov**, N. Plevritakis and J. Tervonen, "Performance Analysis and Comparison of Bluetooth Low Energy with IEEE 802.15.4 and SimpliCI", Journal of Sensor and Actuator Networks, Vol. 2, Issue 3, MDPI, ISSN: 2224-2708 (*JUFO ranking: Level 1*), 2013, pp. 589-613.

[J1] **K. Mikhaylov** and J. Tervonen, "Energy-efficient Routing in Wireless Sensor Networks Using Power-Source Type Identification", International Journal of Space-Based and Situated Computing, Vol. 2, Issue 4, Inderscience, ISSN: 2044-4907 (*JUFO ranking: —*), 2012, pp. 253-266.

Peer-reviewed conference papers:

Published:

[C24] J. Petäjälä, M. Pettissalo, **K. Mikhaylov**, A. Roivainen and T. Hänninen, "On the Coverage of LPWANs: Range Evaluation and Channel Attenuation Model for LoRa Technology", in Proc. ITST'15 (*JUFO ranking: Level 1*), Dec. 2-4 2015, Copenhagen, Denmark, pp. 55-59.

[C23] **K. Mikhaylov**, J. Petäjälä, M. Mäkeläinen, A. Paatelma and T. Hänninen, "Modular Multi-Radio Wireless Sensor Platform with Plug&Play Modules Connection", Proc. IEEE SENSORS'15 (*JUFO ranking: Level 1*), Nov. 1-4 2015, Busan, ROK, p. 1.

[C22] **K. Mikhaylov** and A. Paatelma, "Enabling Modular Plug&Play Wireless Sensor and Actuator Network Nodes: Software Architecture", Proc. IEEE SENSORS'15 (*JUFO ranking: Level 1*), Nov. 1-4 2015, Busan, ROK, pp. 1-4.

[C21] **K. Mikhaylov**, J. Petäjälä, M. Mäkeläinen, A. Paatelma and T. Hänninen, "Modular Multi-radio Wireless Sensor Platform for IoT Trials with Plug&Play Module Connection", Proc. 21st Annual International Conference on Mobile Computing and Networking (*JUFO ranking: Level 2*), Sept. 7-11 2015, Paris, France, pp. 188-189.

¹ Alternative sources:

Personal web-page: <http://cc.oulu.fi/~kmikhay/Publications.html>

Google Scholar: <https://scholar.google.com/citations?user=D61UbdcAAAAJ>

DBLP: <http://dblp.uni-trier.de/pers/hd/m/Mikhaylov:Konstantin>

Researchgate: http://www.researchgate.net/profile/Konstantin_Mikhaylov/publications

University of Oulu: https://solecris.oulu.fi/crisyp/dispatch/en/cr_redir_all/fet/fet/sea?direction=3&id=10274631

- [C20] A. Pagani and **K. Mikhaylov**, "Resource Sharing Between Neighboring Nodes in Heterogeneous Wireless Sensor Networks", Proc. 24th European Conference on Networks and Communications (*JUFO ranking: Level 1*), June 29 - July 2 2015, Paris, France, pp. 527-532.
- [C19] **K. Mikhaylov**, J. Petäjäjärvi, M. Mäkeläinen, A. Paatelma and T. Hänninen, "Extensible Modular Wireless Sensor and Actuator Network and IoT Platform with Plug&Play Module Connection", Proc. 14th ACM/IEEE International Conference on Information Processing in Sensor Networks (*JUFO ranking: Level 2*), Apr. 13-16 2015, Seattle, USA, pp. 386-387.
- [C18] J. Petäjäjärvi, **K. Mikhaylov**, H. Karvonen, R. Vuotoniemi and M. Hämäläinen, "Loose Synchronization Method for Low-power Superregenerative Wake-up receiver", Proc. 9th International Symposium on Medical Information and Communication Technology (*JUFO ranking: Level 1*), Mar. 24-26 2015, Kamakura, Japan, pp. 209-212.
- [C17] J. Tervonen, **K. Mikhaylov**, S. Pieskä, J. Jämsä and M. Heikkilä, "Cognitive Internet-of-Things Solutions Enabled by Wireless Sensor and Actuator Networks", Proc. 5th IEEE Conference on Cognitive Infocommunicaitons (*JUFO ranking: Level 1*), Nov. 5-7 2014, Vietri sul Mare, Italy, pp. 97-102.
- [C16] **K. Mikhaylov** and M. Huttonen, "Modular Wireless Sensor and Actuator Network Nodes with Plug-and-Play Module Connection", Proc. IEEE Sensors Conference (*JUFO ranking: Level 1*), Nov. 3-5 2014, Valencia, Spain, pp. 1264-1268.
- [C15] **K. Mikhaylov**, "Accelerated Connection Establishment (ACE) Mechanism for Bluetooth Low Energy", Proc. 25th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (*JUFO ranking: Level 1*), Sept. 2-5 2014, Washington, USA, pp. 1264-1268.
- [C14] **K. Mikhaylov**, "Simulation of Network-Level Performance for Bluetooth Low Energy", Proc. 25th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (*JUFO ranking: Level 1*), Sept. 2-5 2014, Washington, USA, pp. 1259-1263.
- [C13] O. Galinina, **K. Mikhaylov**, S. Andreev and A. Turlikov, "Wireless Sensor Network Based Smart Home System over BLE with Energy Harvesting Capability. ", in Proc. NEW2AN'14 conference (*JUFO ranking: Level 1*), Aug. 27-29 2014, St.Petersburg, Russia, pp. 419-432.
- [C12] **K. Mikhaylov**, T. Pitkaaho, J. Tervonen and M. Niemela, "Wireless Sensor Glove Interface and its Application in Digital Holography ", in Proc. CogInfoCom'13 conference (*JUFO ranking: Level 1*), Dec. 2-5 2013, Budapest, Hungary, pp. 325-330.
- [C11] **K. Mikhaylov** and J. Tervonen, "Multihop Data Transfer Service for Bluetooth Low Energy", in Proc. ITST'13 conference, ISBN: 978-1-4799-0845-5 (*JUFO ranking: Level 1*), Nov. 5-7 2013, Tampere, Finland, pp. 319-324.
- [C10] **K. Mikhaylov** and J. Tervonen, "Data Collection from Isolated Clusters in Wireless Sensor Networks Using Mobile Ferries", in Proc. FINA'13(AINA'13), ISBN: 978-1-4673-6239-9 (*JUFO ranking: —*), Mar. 25-28 2013, Barcelona, Spain, pp. 903-909.
- [C9] **K. Mikhaylov** and J. Tervonen, "Energy Consumption of the Mobile Wireless Sensor Network's Node Platform with Controlled Mobility", in Proc. EASyCoSe'13(AINA'13), ISBN: 978-1-4673-6239-9 (*JUFO ranking: —*), Mar. 25-28 2013, Barcelona, Spain, pp. 1582-1587.
- [C8] **K. Mikhaylov** and J. Tervonen, "Novel Energy Consumption Model for Simulating Wireless Sensor Networks", in Proc. ICUMT 2012, ISBN: 978-1-4673-2016-0 (*JUFO ranking: —*), St.Petersburg, Russia, Oct. 3-5 2012, pp. 22-28.
- [C7] **K. Mikhaylov** and J. Tervonen, "Evaluation of Power Efficiency for Digital Serial Interfaces of Microcontrollers", in Proc. NTMS 2012, ISBN: 978-1-4673-0228-9 (*JUFO ranking: Level 1*), Istanbul, Turkey, May 7-10 2012, pp. 1-5.
- [C6] **K. Mikhaylov** J. Tervonen, J. Heikkilä and J.Känsäkoski, "Wireless Sensor Networks in Industrial Environment: Real-Life Evaluation Results", in Proc. BCFIC 2012, ISBN: 978-1-4673-1672-9 (*JUFO ranking: —*), Vilnius, Lithuania, Apr. 25-27 2012, pp. 1-7.
- [C5] **K. Mikhaylov** and J. Tervonen, "Experimental Evaluation of Alkaline Batteries' Capacity for Low-Power Applications", in Proc. AINA 2012, ISBN: 978-1-4673-0714-7 (*JUFO ranking: Level 1*), Mar. 26-29 2012, Fukuoka, Japan, pp. 331-337.
- [C4] **K. Mikhaylov** and J. Tervonen, "Node's Power Source Type Identification in Wireless Sensor Networks", in Proc. BWCCA 2011, ISBN: 978-1-4577-1455-9 (*JUFO ranking: —*), Oct. 26-28 2011, Barcelona, Spain, pp. 521-525.

[C3] **K. Mikhaylov** and J. Tervonen, "Energy Efficient Data Restoring After Power-downs for Wireless Sensor Networks Nodes with Energy Scavenging", in Proc. WSN-ADT'11(NTMS 2011), ISBN: 978-1-4244-8703-5 (*JUFO ranking: Level 1*), Feb. 7-10 2011, Paris, France, pp. 1-5.

[C2] **K. Mikhaylov** and J. Tervonen, "Optimization of Microcontroller Hardware Parameters for Wireless Sensor Network Node Power Consumption and Lifetime Improvement", in Proc. ICUMT 2010, ISBN: 978-1-4244-7285-7 (*JUFO ranking: —*), May 7-10 2012, Moscow, Russia, pp. 1-5.

[C1] **K. Mikhaylov** and J. Tervonen, "Improvement of Energy Consumption for Over-The-Air Reprogramming in Wireless Sensor Networks", in Proc. ISWPC 2010, ISBN: 978-1-4244-6855-3 (*JUFO ranking: Level 1*), May 5-7 2010, Modena, Italy, pp. 86-92.

Book chapters:

Published:

[BC2] **K. Mikhaylov**, J. Jamsa, M. Luimula, J. Tervonen and V. Autio, "Intelligent Sensor Interfaces and Data Format," in *Intelligent Sensor Networks: Across Sensing, Signal Processing, and Machine Learning*, F. Hu and Q. Hao (Eds.), Taylor & Francis, CRC Press, ISBN: 978-1-4398-9281-7 (*JUFO ranking: Level 2*), 2012, pp. 55-76.

[BC1] **K. Mikhaylov**, J. Tervonen and D. Fadeev, "Development of Energy Efficiency Aware Applications Using Commercial Low Power Embedded Systems," in *Embedded Systems - Theory and Design Methodology*, K. Tanaka, Ed., Rijeka, Croatia: InTech, ISBN: 978-9-5351-0167-3 (*JUFO ranking: Level 1*), 2012, pp. 407-430.

Patents and invention reports:

[I3] D. Macagnano, G. Destino, **K. Mikhaylov** and M. Huttonen, Invention Report №OU14029, University of Oulu, 2014

[I2] **K. Mikhaylov** and J. Tervonen, Invention Report №OU13043, University of Oulu, 2013

[I1] **K. Mikhaylov** and J. Tervonen, Invention Report №OU12024, University of Oulu, 2012

Publications intended for professional communities:

[O1] J. Tervonen, **K. Mikhaylov**, T. Pitkääho and J. Käsäkoski, "Reaaliaikaista anturidataa langattomasti", Proessori, Issue 4, Sanoma Magazines, ISSN: 0357-4121, 2011, pp. 20-22.