

# Michal Chovanec

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## Work experiences

2016–today	research on Faculty of management science and informatics Artificial intelligence and learning systems
2015–2016	Ceit group, Žilina ZIMS department, robotics research and development
2012–2013	Scheidt&Bachmann, Žilina Bahn department, railway security (solutions) systems (Visual C++ programming)

## Education

2013–2016	PhD degree : Faculty of management science and informatics, University of Žilina PhD thesis : Function approximation in Q-learning algorithms
2011–2013	Master degree : Faculty of management science and informatics, Computer engineering, Ing. (Msc.) Diploma thesis : Operational system for arm cortex-m3
2007–2011	Bachelor degree : Faculty of management science and informatics, Computer engineering Bc. Bachelor thesis : FPGA audio player (Xilinx FPGA)

## Computer skills

C	expert
C++, Ruby	advanced
VHDL, Java	basic
tools	GNU GCC, G++, Qt, Boost, Gnuplot, Sublime, Atom, OpenMPI, Linux, Latex
microcontrollers	ARM Cortex M0..M4 (stm32), MSP430, AVR
technologies	NRF70, Xbee, NVIDIA Cuda, Xilinx FPGA
other	real time systems, artificial intelligence, robotics, inertial navigation, control theory, adaptive and learning systems

## Rewards

2016	Istrobot Line Follower L2 category first place (robotics competition)
2013	Master degree with honours
	Dean price for best diploma thesis
	ACM Certificate Gallery of the best
	Soit price for open sources diploma thesis, 3rd place
2011	Dean price for best bachelor thesis

## Publications

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|------|---|
| 2012 | [1] Preemptívny multitasking pre mikrokontroléry s jadrom ARM Cortex M3 Michal Chovanec. - 2012 In: Otvorený softvér vo vzdelávaní, výskume a v IT riešeníach S. 27-32 zborník príspevkov medzinárodnej konferencie OSSConf 2012 2.-4. júla 2013 Žilina, Slovensko Bratislava Spoločnosť pre otvorené informačné technológie 2012, ISBN 978-80-970457-2-2                               |
| 2013 | [2] Akcelerometrické meranie výstrelu z luku Michal Chovanec a Jaroslav Múčka. - 2013 In: Otvorený softvér vo vzdelávaní, výskume a v IT riešeníach S. 39-46 zborník príspevkov medzinárodnej konferencie OSSConf 2013 2.-4. júla 2013 Žilina, Slovensko Bratislava Spoločnosť pre otvorené informačné technológie 2013, ISBN 978-80-970457-3-9   |
|      | [3] Wireless sensor networks for intelligent transportation systems Michal Hodoň, Juraj Miček, Michal Chovanec. - 2013 In: IEEE CommSoft E-Letters Vol. 2, no. 1, (2013), online, s. 3-8 elektronický zdroj   |
|      | [4] Intelligent traffic-safety mirror, M. Hodon, M. Chovanec, M. Hyben, 2013 In: Studia Informatica Universalis - 2013, volume 11/1   |
| 2014 | [5] Universal synchronization algorithm for wireless sensor networks - "FUSA algorithm" / Michal Chovanec ... [et al.]. In: FedCSIS : proceedings of the 2014 federated conference on Computer science and information systems : September 7-10, 2014, Warsaw, Poland. - Los Alamitos; Warsaw: IEEE; Polskie Towarzystwo Informatyczne, 2014. - ISBN 978-83-60810-61-3. - S. 1001-1007. |
|      | [6] Tiny low-power WSN node for the vehicle detection [Jednoduchý energeticky-efektívny nód bezdôtovej senzorovej siete určený na detekciu automobilov] / Michal Chovanec, Michal Hodon and Lukas Cechovic.   |
|      | [7] Investigation of the gyro-sensor contribution to the straight movement of vehicle [Analýza vplyvu gyroskopického senzora pri priamom pohybe vozidla] / Michal Hodoň, Michal Chovanec.   |
| 2015 | [8] Required value classification using Kohonen neural network = Klasifikácia žiadanej hodnoty Kohonenovou neurónovou sieťou / Michal Chovanec. In: Otvorený softvér vo vzdelávaní, výskume a v IT riešeníach : zborník príspevkov medzinárodnej konferencie OSSConf 2015 : 1.-3. júla 2015 Žilina, Slovensko. - Žilina: Žilinská univerzita, 2015. - ISBN 978-80-970457-7-7.           |
| 2016 | [9] Water level monitoring based on the acoustic signal using the neural network / Veronika Olesnanikova, Karpíš Ondrej, Chovanec Michal, Šarašin Peter, Žalman Róbert In: Information and digital technologies 2016 proceedings of the international conference : 5-7 July 2016 Rzeszow, Poland. - [S.l.]: IEEE, 2016. - ISBN 978-1-4673-8860-3  |
|      | [10] Aeris Robots Laboratory with Dynamic Environment / Michal Chovanec, Lukáš Čechovič, Lukáš Mandák, Robotics in Education Research and Practices for Robotics in STEM Education ISBN: 978-3-319-42974-8 (Print) 978-3-319-42975-5 (Online), pages 169-180  |

## Interests

robotics (artificial intelligence, real time controll), outdoor (hiking, running, bouldering, caving, survival and critical situations), martial arts (archery, aikido, kenjutsu), music, yoga

## Personal projects

Work in robotics : research and implementation control algorithms, neural networks, programming in embedded C (std 99), simulations in C++ (std 11) or Ruby

- source code [https://github.com/michalnand/motoko\\_after\\_math\\_linefollower](https://github.com/michalnand/motoko_after_math_linefollower)
- web1 : <http://letsmakerobots.com/node/43789>
- web2 : <http://letsmakerobots.com/node/39958>
- video : [https://www.youtube.com/watch?v=8sskJN\\_zuko](https://www.youtube.com/watch?v=8sskJN_zuko)

Real time operating system (diploma thesis)

- source code : [https://github.com/michalnand/suzuha\\_os](https://github.com/michalnand/suzuha_os)
- publication : <https://fedcsis.org/proceedings/2015/pliks/146.pdf>

Dissertation research data - Q function approximation in Q-learning algorithms , reinforcement learning

- current research : [https://github.com/michalnand/sparse\\_memory](https://github.com/michalnand/sparse_memory)
- source code : [https://github.com/michalnand/q\\_learning](https://github.com/michalnand/q_learning)
- summary : [https://github.com/michalnand/q\\_learning/blob/master/doc/presentation\\_march\\_2016\\_ktk/presentation.pdf](https://github.com/michalnand/q_learning/blob/master/doc/presentation_march_2016_ktk/presentation.pdf)