Michal Chovanec

michal.nand@gmail.com

Ing. Michal Chovanec, PhD.
Staničná 11
Lietavská Lúčka 01311
Slovakia

Work experiences

2018–today	Research on Faculty of management science and informatics Cell in fluid - red blood cells trajectory prediction using deep neural networks
	Deep reinforcement learning for GO game using dense CNN
2016–2018	Research on Faculty of management science and informatics Artifical inteligence and learning systems
	Deep reinforcement learning for GO game using dense CNN
	Dense net implementations on embedded system
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 (stm32)
2007–2011	Bachelor degree : Faculty of management science and informatics, Computer engineering Bc. Bachelor thesis : FPGA audio player (Xilinx FPGA)

Computer skills

expert	C, C++, Python
basic	Ruby, VHLD, Java
tools	GNU GCC, G++, NVCC, Make, Gnuplot, Sublime, Atom, dfu-util
technologies	NVIDIA Cuda, OpenMPI, OpenGL, OpenCV, Numpy, Scipy, JsonCpp, CImg
embedded	ARM Cortex M0..M7 (stm32), msp430, avr
other	real time systems, artificial intelligenc (deep learning, reinforcement learning), robotics, inertial nevigation, controll theory, adaptive and learning systems

Rewards

2016	Istrobot Line Follower L2 cathegory first place (robotics competition)
2013	Master degree with honors 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

2012 [1] Preemptívny multitasking pre mikrokontroléry s jadrom ARM Cortex M3 Michal Chovanec. - 2012 In: Otvorený softvér vo vzdelávaní, výskume a v IT riešeniach 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 riešeniach 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 riešeniach : 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, Karpiš Ondrej, Chovanec Michal, Šarafín 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

2018 [11] Simulation of blood flow in microfluidic devices for analysing of video from real experiments / Hynek Bachratý, Katarína Bachratá, Michal Chovanec, František Kajánek, Monika Smiešková, Martin Slavík

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

Projects in deep learning fields, including sources on github and some videos

- Convolutional neural networks framework
- Deep Q networks
- Reinforcement learning examples
- Deep Q networks
- Neural network playing GO
- Red blood cells trajectory prediction
- Image recognition

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

- source code https://github.com/michalnand/motoko_uprising
- Self learning robot - Post on hackaday blog
- Line following robot - Post on hackaday blog
- web1 : http://letsmakerobots.com/node/43789
- web2 : http://letsmakerobots.com/node/39958
- video : https://www.youtube.com/watch?v=8sskJN_zuko
- video : https://www.youtube.com/watch?v=xXKnUeN1VgI
- video from competition : https://www.youtube.com/watch?v=UDmeS721_-Q

Real time operating system (diploma thesis)

- source code : 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

- source code : https://github.com/michalnand/q_learning
- summary : https://github.com/michalnand/q_learning/blob/master/doc /presentation_march_2016_ktk/presentation.pdf