ASSOC. PROF. DR. MIHA MOŠKON

UNIVERSITY ADDRESS	Computational Biology Group Faculty of Computer and Information Science University of Ljubljana Večna pot 113 SI-1000 Ljubljana Slovenia
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PERSONAL PROFILES	ResearchGate: https://www.researchgate.net/profile/Miha_Moskon GitHub: https://github.com/mmoskon Publons: https://publons.com/researcher/1498856/miha-moskon/ Google Scholar: https://scholar.google.com/citations?user=LEnDVmgAAAAJ Orcid: https://orcid.org/0000-0003-4600-1730
PERSONAL DETAILS	Gender: male Date of birth: 28. 10. 1983 Nationality: Slovenian
PERSONAL ATTRIBUTES	I am eager for new challenges, hardworking and effective in communication. I like to work in a group, also as a leader. I am a good teacher and I always try to have a positive attitude.
LANGUAGES	Slovenian: native English: fluent German: basic
EDUCATION	**September 2012: Doctor of philosophy in Computer and information science, Faculty of computer and information science, University of Ljubljana** Thesis entitled *Computer structures perspective on switching dynamics of simple biological systems*, supervised by Prof. Dr. Miha Mraz, investigated an establishment of computer structures with engineered gene regulatory networks. **March 2007: Bachelor of Science in Computer and information science,**

	Faculty of computer and information science, University of Ljubljana Thesis entitled *Modelling foraging behaviour in a fuzzy model for a computer simulation of bird flocking*, supervised by Prof. Dr. Iztok Lebar Bajec, introduced a foraging behaviour into a fuzzy bird flocking model.
POSITIONS	**March 2020 – present: Associate professor, Faculty of computer and information science, University of Ljubljana** **Responsibilities:** teaching different courses at different faculties (Faculty of Computer and Information Science, Faculty of Chemistry and Chemical Technology, Biotechnical Faculty) and mentoring BSc, MSc and PhD students (Faculty of Computer and Information Science, Faculty of Medicine) with their final theses preparation, project management, conducting scientific work, serving in different faculty committees. **March 2014 – March 2020: Assistant professor, Faculty of computer and information science, University of Ljubljana** **Responsibilities:** teaching the courses at the university, advising students with their final theses preparation, project management, conducting scientific work, serving in different faculty committees. **March 2007 – March 2014: Teaching assistant, Faculty of computer and information science, University of Ljubljana** **Responsibilities:** leading the laboratory courses in Unconventional Computing, Switching Structures and Systems, Programmable Logic Systems, Logic Design of Computers, Computer Networks Modelling, Wireless Sensor Networks, Wireless and Mobile Networks.
PRIZES, AWARDS AND FELLOWSHIPS	2017: coauthor of one of the best 10 research achievements of the University of Ljubljana in 2017 (for the work Large-scale computational models of liver metabolism: how far from the clinics) 2016: certificate of recognition for young university teachers and associates from the University of Ljubljana (among the highest awards at the University of Ljubljana) 2016: advisor to the computational part of the Slovenian iGEM 2016 team (Best foundational advance prize at the iGEM World Championship) 2013: COBRA Exchange Programme award 2012: advisor to the computational part of the Slovenian iGEM 2012 team (First runner up, best Health and Medicine prize, best Model prize, best Wiki prize at the iGEM World Championship) 2010: advisor to the computational part of the Slovenian iGEM 2010 team (Grand prize winners at the iGEM World Championship) 2007: Prešeren's award from the University of Ljubljana, Faculty of Computer and Information Science, for the thesis on Fuzzy model of foraging behaviour in a bird flocking simulation

	2006 and 2005: Dean's awards from the University of Ljubljana, Faculty of Computer and information Science From 1998 to 2008: Zois scholarship for distinctly talented pupils and students
RESEARCH WORK	My research work is focused to computational approaches in systems medicine, systems biology, and synthetic biology. I am interested in different aspects of modelling, design, and optimization of biological systems, especially in the context of their dynamical response. My main research interests have been recently directed towards accurate quantitative modelling and analysis of metabolic and gene regulatory networks and towards the computational design of synthetic biological systems, such as biological processor. I have recently coordinated and collaborated in several projects that were focused on the implementation of computational support systems for data management in experimental laboratories as well as within the clinical environment. Here, the primary emphasis has been made on the tracking, analysis and management of laboratory samples. I am currently collaborating in the project that will provide a web platform for the interactive visualisation of diagnostic algorithms.
TEACHING	I currently teach the following courses at the University of Ljubljana: Computational Biology (PhD), Introduction to computer programming (BSc) and Digital Logic Design (BSc), and lead the laboratory practice for the course Unconventional information processing methods and platforms (MSc).
PROJECT WORK	2019 – 2022: Data integration framework for the assessments of the sustainable efficiency in Slovene neighbourhoods and settlements – Slovenian Research Agency, ARRS J5-1798 (PI at the Faculty of Computer and Information Science) 2019 – 2022: Precision Medicine at the Interface of Translational Research and Systems Medicine (TranSYS), H2020-MSCA-ITN-2019 (partner) 2019: Establishment of open information system for the management of biological samples in the biobank repositories, PKP – European Structural and Investment Funds (coordinator) 2018 – 2021: CholesteROR in metabolic liver disease – Slovenian Research Agency, ARRS J1-9176 (researcher) 2019: Standardization of procedures for obtaining biological samples and information system for biobanks, SIPK – European Structural and Investment Funds (partner) 2018: Computational support for identification of genetic predispositions and diagnostics of complex diseases, PKP – European Structural and Investment Funds (coordinator) 2018: Information system for tracking and management of samples, material and chemicals in health sciences, SIPK – European Structural and Investment Funds (coordinator) 2018: Genetic diagnostics of blood diseases, SIPK – European Structural and

	Investment Funds (partner) 2017: Development of information system for tracking, analysis and management of laboratory samples in the field of functional genomics, PKP-3D 25-13-3 – European Structural and Investment Funds (coordinator). 2017: Dark secrets of fast fashion, PKP-3D – European Structural and Investment Funds (partner). From 2009 to 2017: Pervasive computing, Research Programme, P2-0359 (researcher). From 2014 to 2017: Designed cellular logic, Basic Research and Application Project, J1-6740 (researcher). From 2009 to 2012: Slovenian research agency - Computer vision for mobile computing and interaction. Basic Research and Application Project (researcher). From 2006 to 2009: Iskratel ltd. – Optimization of resiliency and fast convergence in the Ethernet network environment. Industry-Funded Project (researcher). From 2008 to 2010: TMG-BMC ltd. – Developing IT support for muscle diagnostics. Industry-Funded Project (researcher). From 2006 to 2008: Slovenian Ministry of Defence - Introduction of fuzzy logic into the process of defence system management. Target Research programmes (researcher).
REVIEWING EXPERIENCE	I have been reviewing papers for the following journals: Neural Computing and Applications, Bioinformatics, Nucleic Acids Research, Molecules, Metabolites, Biochemistry and Biophysics, BMC Bioinformatics, BMC Systems Biology, Computers in Biology and Medicine, IEEE Transactions on Circuits and Systems, IEEE Transactions on Human-Machine Systems, International Journal of Metaheuristics, Mathematical Problems in Engineering, Journal of Advanced Transportation, Applied Sciences, and Economic and Business Review.
PHD STUDENTS	Andrew Walakira (co-advisor, starting in Autumn 2020, Biomedicine) Žiga Pušnik: Context-Specific Boolean Inference of Gene Regulatory Networks (Computer and Information Science) Mattia Petroni: Computational methodology for enhanced sensitivity analysis of gene regulatory networks (Computer and Information Science, finished in 2018) Tanja Cvitanović: Application of SteatoNet to predict network disorders in liver metabolism (co-advisor, Biomedicine, finished in 2018)
SELECTED PUBLICATIONS	**Review articles** DEBELJAK, Nataša, LAZAREVIČ, Julija, MISKIČ, Dejan, VERMIGLIO, Lucija,

KOPITAR, Anja, SOLAROVIČ, Anja, SEVER, Matjaž, FINK, Martina, PAJIČ, Tadej, ANŽEJ DOMA, Saša, **MOŠKON, Miha**, PRELOŽNIK-ZUPAN, Irena. Characterization of erythrocytosis and a proposed diagnostic algorithm in Slovenia. Slovenian Medical Journal, May/June. 2019, Vol. 88, No. 5/6, pp. 263-275

CVITANOVIĆ TOMAŠ, Tanja, **MOŠKON, Miha**, MRAZ, Miha, ROZMAN, Damjana. Computational modelling of liver metabolism and its applications in research and the clinics. Acta chimica slovenica. June 2018, vol. 65, no. 2, pp. 253-265, DOI: 10.17344/acsi.2018.4461.

REJC, Živa, MAGDEVSKA, Lidija, TRŠELIČ, Tilen, OSOLIN, Timotej, VODOPIVEC, Rok, MRAZ, Jakob, PAVLIHA, Eva, ZIMIC, Nikolaj, CVITANOVIĆ, Tanja, ROZMAN, Damjana, **MOŠKON, Miha**, MRAZ, Miha. Computational modelling of genome-scale metabolic networks and its application to CHO cell cultures. *Computers in Biology and Medicine*, Sep. 2017, vol. 88, pp. 150-160, doi: 10.1016/j.compbiomed.2017.07.005.

CVITANOVIĆ, Tanja, REICHERT, Matthias C., **MOŠKON, Miha**, MRAZ, Miha, LAMMERT, Frank, ROZMAN, Damjana. Large-scale computational models of liver metabolism: how far from the clinics?. Hepatology, 2017, vol. 66, no. 4, pp. 1323-1334, doi: 10.1002/hep.29268

Original scientific articles

PUŠNIK, Žiga, MRAZ, Miha, ZIMIC, Nikolaj, **MOŠKON, Miha**. Computational analysis of viable parameter regions in models of synthetic biological systems. Journal of biological engineering. Sep. 2019, vol. 13, https://jbioleng.biomedcentral.com/articles/10.1186/s13036-019-0205-0, DOI: 10.1186/s13036-019-0205-0.

JUKAN, Nermin, ZAGORŠEK, David, LAZAREVIČ, Julija, PRELOŽNIK-ZUPAN, Irena, DEBELJAK, Nataša, **MOŠKON, Miha**. ViDis : a platform for constructing and sharing of medical algorithms. Journal of computational biology. 2019. https://www.liebertpub.com/doi/pdf/10.1089/cmb.2019.0238, DOI: 10.1089/cmb.2019.0238.

MAGDEVSKA, Lidija, MRAZ, Miha, ZIMIC, Nikolaj, **MOŠKON, Miha**. Initial state perturbations as a validation method for data-driven fuzzy models of cellular networks. BMC bioinformatics. Sep. 2018, vol. 19, no. 333, str. 1-7, graf. prikazi. ISSN 1471-2105. https://bmcbioinformatics.biomedcentral.com/articles/10.1186/s12859-018-2366-0, DOI: 10.1186/s12859-018-2366-0.

CVITANOVIĆ TOMAŠ, Tanja; URLEP, Žiga; **MOŠKON, Miha**; MRAZ, Miha; ROZMAN, Damjana, LiverSex Computational Model: Sexual Aspects in Hepatic Metabolism and Abnormalities, *Frontiers in Physiology*, 2018 (doi:10.3389/fphys.2018.00360)

MOŠKON, Miha, ZIMIC, Nikolaj, MRAZ, Miha. Grohar : automated visualization of genome-scale metabolic models and their pathways. Journal of computational biology. May 2018, vol. 25, no. 5, pp. 505-508. ISSN 1066-5277.

http://online.liebertpub.com/doi/10.1089/cmb.2017.0209, DOI: 10.1089/cmb.2017.0209.

BORDON, Jure, **MOŠKON, Miha**, ZIMIC, Nikolaj, MRAZ, Miha. Semi-quantitative modelling of gene regulatory processes with unknown parameter values using fuzzy logic and Petri nets. Fundamenta informaticae. 2018, vol. 160, no. 1/2, pp. 81-100, DOI: 10.3233/FI-2018-1675.

VASYLCHENKOVA, Anastasiia, MRAZ, Miha, ZIMIC, Nikolaj, **MOŠKON, Miha**. Classical mechanics approach applied to analysis of genetic oscillators. *IEEE/ACM transactions on computational biology and bioinformatics*, 2017, vol. 14, no. 3, pp. 721-727, doi: 10.1109/TCBB.2016.2550456.

MAGDEVSKA, Lidija, PUŠNIK, Žiga, MRAZ, Miha, ZIMIC, Nikolaj, **Moškon, Miha**. Computational design of synchronous sequential structures in biological systems. *Journal of computational science*, 2017, vol. 18, pp. 24-31, doi: 10.1016/j.jocs.2016.11.010.

MOŠKON, Miha, ZIMIC, Nikolaj, MRAZ, Miha. Implementation of a binary memory in simple biological circuits. *Electrotechnical review*, 2016, vol. 83, no. 4, pp. 194-200

BIZJAK, Manca, ZIMIC, Nikolaj, MRAZ, Miha, **MOŠKON, Miha**. Computational framework for modeling multiple noncooperative transcription factor binding and its application to the analysis of nuclear factor kappa B oscillatory response. *Journal of computational biology*, vol. 23, no. 12, pp. 923-933, doi: 10.1089/cmb.2016.0065.

BORDON, Jure, **MOŠKON, Miha**, ZIMIC, Nikolaj, MRAZ, Miha. Fuzzy logic as a computational tool for quantitative modelling of biological systems with uncertain kinetic data. *IEEE/ACM transactions on computational biology and bioinformatics*, 2015, vol. 12, no. 5, pp. 1199-1205, doi: 10.1109/TCBB.2015.2424424.

PETRONI, Mattia, ZIMIC, Nikolaj, MRAZ, Miha, **MOŠKON, Miha**. Stochastic simulation algorithm for gene regulatory networks with multiple binding sites. *Journal of computational biology*, 2015, vol. 22, no. 3, pp. 218-226, doi: 10.1089/cmb.2014.0064.

ŠOBERL, Domen, ZIMIC, Nikolaj, LEONARDIS, Aleš, KRIVIC, Jaka, **MOŠKON, Miha**. Hardware implementation of FAST algorithm for mobile applications. *Journal of signal processing systems for signal, image, and video technology*, 2015, vol. 79, no. 3, pp. 247-256, doi: 10.1007/s11265-013-0843-2.

MOŠKON, Miha, MRAZ, Miha. Systematic approach to computational design of gene regulatory networks with information processing capabilities. *IEEE/ACM transactions on computational biology and bioinformatics*, 2014, vol. 11, no. 2, pp. 431-440, doi: 10.1109/TCBB.2013.2295792.

STRAŽAR, Martin, MRAZ, Miha, ZIMIC, Nikolaj, **MOŠKON, Miha**. An adaptive genetic algorithm for parameter estimation of biological oscillator models to achieve target quantitative system response. *Natural computing*, 1567-7818, Mar. 2014, vol. 13, no. 1, pp. 119-127.

MOŠKON, Miha, NOVAK, Štefan, MEDEOT, Marino, LEBAR BAJEC, Iztok, ZIMIC, Nikolaj, MRAZ, Miha. Solving the logistic problems with optimal resource assignment using fuzzy logic methods. *Journal of advanced transportation*, June 2013, vol. 47, no. 4, pp. 447-460.

VUČKO, Dušan, MRAZ, Miha, ZIMIC, Nikolaj, **MOŠKON, Miha**. Hybrid discrete algorithm for the modelling of gene regulatory networks. *Biosystems and information technology*, Nov. 2013, vol. 2, no. 2, pp. 32-36.

MOŠKON, Miha, ZIMIC, Nikolaj, STRAŽAR, Martin, MRAZ, Miha. Comparison of selected performances of biological and electronic information processing structures. *Przegląd Elektrotechniczny*, 2013, no. 2a, pp. 165-169.

MOŠKON, Miha, MRAZ, Miha. Modelling and analysing the information processing capabilities of simple biological systems. *Mathematical Modelling and Analysis*, Sep. 2012, vol. 17, no. 4, pp. 467-484.

MOŠKON, Miha, MRAZ, Miha. Modelling as the essential step in the construction of biological computer structures. *International journal of information and education technology*, Aug. 2011, vol. 1, no. 3, pp. 185-189.

MOŠKON, Miha. Solving the vaguely defined assignment problems. *International journal of mathematical models and methods in applied sciences*, 2011, vol. 5, no. 4, pp. 773-780.

MOŠKON, Miha, AVBELJ, Monika, JERALA, Roman, ZIMIC, Nikolaj, MRAZ, Miha. A model of the RS memory-cell realization in biological systems. *Electrotechnical Review*, 2009, vol. 76, no. 4, pp. 223-228.

MOŠKON, Miha, AVBELJ, Monika, ZIMIC, Nikolaj, MRAZ, Miha. Toward in vivo digital synchronous sequential circuits. *WSEAS Transactions on Circuits*, 2009, vol. 8, no. 3, pp. 301-310.

Books or Book Chapters

MOŠKON, Miha, BORDON, Jure, MRAZ, Miha, ZIMIC, Nikolaj, PETRONI, Mattia. Computational approaches in synthetic and systems biology. V: VALENTE, André Xavier C. N. (ur.). Recent advances in systems biology research, (Systems biology). New York: Nova Science Publishers, 2014, pp. 131-156.

MRAZ, Miha, **MOŠKON, Miha**. *Modelling of computer networks,* 1st Edition, Ljubljana: FE & FRI, 2012. ISBN 978-961-6209-80-9.

Workshops organised

MOŠKON, Miha, ROZMAN, Damjana, CVITANOVIĆ, Tanja. *Tackling liver disease : an object oriented modelling approach : hands-on tutorial at CASyM Winter School, 3rd SySBioMED, March 29th - April 1st 2017, Ljubljana, Slovenia*.

ROZMAN, Damjana, CVITANOVIĆ, Tanja, **MOŠKON, Miha**. *Tackling liver disease : an object modelling approach : hands-on tutorial at Modelling and bioinformatics for personalised medicine, 2nd SysBioMed, 1st Conference of the European Association of Systems Medicine, 26th October 2016*, *Berlin, Germany*.

MOŠKON, Miha, CVITANOVIĆ, Tanja, MRAZ, Miha. *Understanding complex diseases with object oriented modelling : hands-on tutorial at EIT Health Summer School on Big Data for Healthy Living, 27 June - 06 July 2016, Archamps, France.*

Invited lectures

MOŠKON, Miha. Analysis of fitness landscape investigation efficiency: predavanje na Institute of Systems and Synthetic Biology, University of Évry-Val-d'Essonne, 18 March 2013. Évry, 2013.

MOŠKON, Miha. Extending the applicability of Phage-Assisted Continuous Evolution (PACE). Évry: Institute of Systems and Synthetic Biology, University of Évry-Val-d'Essonne, 21 June 2013.

MOŠKON, Miha. Hardware support for mobile vision. Varna: Technical University, 22-26 September 2010.

MOŠKON, Miha. Fuzzy logic applied to modelling of bird flock foraging behaviour. Kharkov: Polytechnic Institute, 23 March 2008.

A complete list of my publications is available at https://bib.cobiss.net/bibliographies/si/webBiblio/bib201_20200528_101303_a110484579.html