Tomáš Starý

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Work Experience

Industry

Researcher and Programmer
Nanoenergies Trade s.r.o., Prague, Czechia *Nov 2017 – Apr 2020*
- Design of system architecture for peer-to-peer energy trading system
- Programming a web portal and scripts for data aquisition, processing and visualisation
- Leading the frontend development end negotiating the IoT devices aquisition
- Testing electronic measurement systems
- Analysing data and finding novel business opportunities

Research

Postdoctoral Research Associate
Exeter Technologies Group, United Kingdom *Oct 2016 – May 2017*
- Simulation of manufacturing of coposite materials
- Development of solvers for partial differential equations (PDEs) of continuum mechanics

Internship in Cardiac Modelling Lab
Institute of Bioengineering and Human Centred Technology, Spain *Sep – Dec 2012*
- Simulations of electro-physiological properties of 1D strand of ventricular tissue

Erasmus Internship
Laboratory of Bioengineering, Electronics and Informatics, Italy *Mar – Sep 2011*
- Data-driven optimisation of parameters in IKs Markov chain model

Teaching

Demonstrations and marking
University of Exeter, UK *Sep – Dec 2013, 2014, 2015*
Module Programming for Science and Business (`Python` programming language)

Administrative

Organiser of Dynamics Reading Group meeting
University of Exeter *Sep 2013 – Jun 2015*

Representative in Student and Staff Liaison Committee
University of Exeter *May 2013 – Sep 2015*

Training

Summer School on Parallel Computing
Inter-university consortium CINECA, Casalecchio di Reno, Italy *5–16 Sep 2011*
- Programming course for parallel in time computing
- libraries `OpenMP` and `MPI`, `CVODE`, `SCALAPACK`, `FFT`, `PETSc`, `Boost`

Practical Training in Health Facilities
University Hospital of Ostrava, Czech Rep. *Jun 2007 – Jun 2008*

- Practical training within Centres of: Haemodialysis , Neonatal Incubation, Mechanical Pulmonary Ventilation, Nuclear Medicine, Burn Therapy, Hyperbaric Chamber Therapy
- Assisting clinical check-up by EEG, ECG, Endoscopy, X-Ray Computed Tomography, Magnetic Resonance, Sonography, Positron Emission Tomography
- Assisting laparoscopic surgery of abdomen, coronary stent placement and cardiac pacemaker placement

Final degree project
University Hospital of Ostrava, Czech Rep. *Sep 2008 – Jun 2009*
- Participating on implementation of a system for glucose testing in blood samples
- Documentation of blood glucose testing of patients

Education

PhD in Applied Mathematics
University of Exeter, United Kingdom *2013–2016*
- Mathematical and Computational Study of Markovian Models of Ion Channels in Cardiac Excitation
- advised by Prof. Vadim N. Biktashev

Master in Biomedical Engineering
Polytechnic University of Valencia, Spain *2009–2011*
Average weighted grade: 7.50/10
- Major in Bioelectricity and Biomedical Engineering

Degree Spanish Language in Commercial Sphere
University of Ostrava, Czech Rep. *2007–2008*
Finished first year, then terminated due to long-term stay in Spain

Degree in Electrical Engineering
VSB–Technical University of Ostrava, Czech Rep. *2006–2009*
Average weighted grade: 7.63/10
- Major in Biomedical Engineering

Computer Skills

Operating system: `GNU`, `Linux`, `Emacs`, `bash`

Programming languages: `C/C++`, `Python`, `PHP` (`Laravel` framework), `Perl`, `Octave` (`Matlab`), `JavaScript` (`ReactJS` framework)

Programming tools: GNU build system (`Autotools`), GNU compiler collection (`gcc`), GNU debugger (`gdb`), version control systems (`git`, `subversion`), virtualisation (`Docker`, `Vagrant`)

Databases: `MySQL`, `MongoDB`, `Postgres`, blockchain experience with `Bitcoin`, `Ethereum` and the second layer solutions (`Lightning`)

Text mark-up: LaTeX, `HTML+CSS`, `XML`, `LibreOffice`

Data visualisation: `gnuplot`, `matplotlib`, `awk`, `sed`, `Logstash`, `Kibana`, `Elasticsearch`, `Grafana`

Graphics: `Inkscape`, `GIMP`, `ImageMagic`, `PStricks`, `TikZ`

Networks: `ssh`, `ftp`, `mpd`, gpg encryption

Languages

- Czech (native)
- Spanish (fluent)
- Italian (basic)
- English (fluent)
- German (elementary)

Publications

Journal articles

- **T. Starý** and V. N. Biktashev. Fast-slow asymptotics for a Markov chain model of fast sodium current. *Chaos, 27: 093937* 2017 DOI: 10.1063/1.5003013
- Antonioletti, M; Biktashev, VN; Jackson, A; Kharche, SR; **Stary, T**; Biktasheva, IV. BeatBox — HPC Environment for Biophysically and Anatomically Realistic Cardiac Simulations.. *Submitted to PLoS ONE* arXiv:1605.06015
- **Starý, T**; Biktashev, VN . Exponential integrators for a Markov chain model of the fast sodium channel of cardiomyocytes. *IEEE Trans. BME* 2015 62(4):1070-1076; DOI:10.1109/TBME.2014.2366466.
- Kharche, SR; **Starý, T**; Colman, MA; Biktasheva, IV; Workman, AJ; Rankin, AC; Holden, AV; Zhang, H. Effects of human atrial ionic remodelling by β-blocker therapy on mechanisms of atrial fibrillation: a computer simulation. *Europace* 2014 16:1524–1533
- Moreno, C; de la Cruz, A; Oliveras, A; Kharche, SR; Guizy, M; Comes, N; **Starý, T**; Ronchi, C; Rocchetti, M; Baró, I; Loussouarn, G; Zaza, A; Severi, S; Felipe, A; Valenzuela, C. Marine n-3 PUFAs modulate IKs gating, channel expression, and location in membrane microdomains. *Cardiovasc Res* 2015 105:223-232

Conference Publications

- **Starý, T**; Biktashev, VN. Evaluating Exponential Integrators for Markov Chain Ion Channel Models. *Computing in Cardiology* 2015 42:885-888
- Kharche, S; Callisesi, G; **Starý, T**; Bracci, A; Severi, S. Simulating Effects of Extracellular Potassium on ECG. *Computing in Cardiology* 2012 39: 225-228

Abstract publications

- **Starý, T**; Biktashev, VN. Analysis of Numerical Methods for Markov Chain Models of Ionic Channels. *British Applied Mathematics Colloquium, Oxford* Apr 2016
- **Starý, T**; Biktashev, VN. Evaluating Exponential Integrators for Markov Chain Ion Channel Models. *Dynamics Days, Exeter* Sep 2015
- **Starý, T**; Biktashev, VN. Practical methods of solving Markov chain type ion current models. *BioDynamics workshop, University of Exeter* Jun 2014
- **Starý, T**; Biktashev, VN. Dynamical Properties of Markov Chain Cardiac Ion Channel. *Computational Cardiac Electrophysiology workshop, Imperial College* May 2014
- **Starý, T**; Biktashev, VN. Practical methods of solving Markov chain type ion current models. *British Applied Mathematics Colloquium* April 2014
- Kharche, S; **Starý, T**; Biktasheva, IV; Zhang, H; Biktashev, VN. The Role of Fibre Orientation in Cardioversion of Chronic Atrial Fibrillation: A Simulation Study. *Journal of Electrocardiology* 2013 46(4), e6-e7l
- Moreno, C, Kharche, S, **Starý, T**, de la Cruz, A; Severi, S, Valenzuela, C. Effects of n-3 polyunsaturated fatty acids on the function, expression and localization of Kv7.1 channels. *European Society of Cardiology Proceedings* 2012
- Kharche, S; **Starý, T**; Callisesi, G; Bracci, A; Severi, S. Correlating Serum Potassium Levels to ECG: A Simulation Study. *Proc Physiol Soc* 2012 27, PC27

Thesis

- **Starý, T** *advised by* Biktashev, VN. Mathematical and Computational Study of Markovian Models of Ion Channels in Cardiac Excitation. *PhD thesis at University of Exeter.* 2016

- **Starý, T** *advised by* Severi, S; Kharche, S; Ferrero De Loma-Osorio, JM. Simulating the Effects of Polyunsaturated Fatty Acids on Human Slowly Activating Delayed Rectifier Potassium Channel (KCNQ1 – KCNE1). *Master degree thesis at Polytechnic University of Valencia.* 2011
- **Starý, T** *advised by* Gajovský, M; Tiefenbach, P. Complex uniform glucose metering [of] patient[s]. *Bachelor degree thesis at VSB – TU Ostrava.* 2009

Updated on August 30, 2020.