

Tomáš Starý, Ph.D.

+420 732 850 444 • tomas@stary.co.uk • stary.co.uk

Work Experience

Industry.....

Freelance consultant & Programmer

Czechia or remotely

since May 2020

- Mathematical models, data analytics and optimisation
- Blockchain and related second layer technologies (lightning network)
- Deployment of self-hosted platforms (Nextcloud, BTCPayServer)
- Outreach, free software and privacy advocate, and open source contributor

Researcher & Development

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 acquisition, processing and visualisation
- Leading the frontend development and negotiating the IoT devices acquisition
- 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 composite 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: ~~TeX~~, 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; **Starý, 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-e71

- 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 September 17, 2020.