

Marina Popleteeva

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Research interests

- Time-domain fluorescence spectroscopy;
- Analysis of biophysical processes;
- Computational modelling.

Skills and competence

Background:	Statistical data analysis Monte Carlo simulation Mathematical modeling Machine learning (Neural networks) Physics
Hand-on	Wet lab experience Time-domain fluorescence lifetime imaging microscopy (FLIM) Förster resonance energy transfer (FRET) Confocal microscopy Optical path alignment Solid-state camera sensors
Programming:	Matlab, R, basic Perl, regular expressions

Education

2014 – current	Faculty of Science, Technology and Communication, University of Luxembourg, Luxembourg M.Sc. in Integrated Systems Biology. Graduation in 2016.
2006 – 2010	Department of Information and Communication Technology, University of Trento, Italy Ph.D. in Computer science.
2004 –2005	Faculty of Radio Physics and Electronics, Belarusian State University, Belarus M.Sc. in Physical Electronics.
1999 – 2004	Faculty of Radio Physics and Electronics, Belarusian State University, Belarus Specialist [B.Sc. + 1 year] (cum laude) in Physical Electronics.

Awards

2006	PhD research grant from the University of Trento, Italy.
2005	Diploma of the 1 st degree in the National Contest of Student Works for the M.Sc. thesis.
2004	Diploma of the 2 nd degree in the National Contest of Student Works for the B.Sc. thesis.

Research Experience

2011 – 2013	Research Associate, Department of Oncology, University of Cambridge - Hutchison/MRC Research Centre, Cambridge, United Kingdom. Hyper Dimensional Imaging Microscopy (HDIM).
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Prototyping SPAD^{*}-based camera for spectrally- and polarization- resolved time-gated fluorescence lifetime imaging microscopy (FLIM) that enables the simultaneous detection of all properties of light. I also developed data acquisition and analysis software, as well as facilitated collaboration with the producer of the optical detector.

- 2010 – 2011 Research consultant (postdoc), SOI research unit, Fondazione Bruno Kessler, Italy.
Simulation and modeling of SPAD-based systems for fluorescence detection.
 Performance analysis of the SPAD simulation system developed during the PhD study, optimization of score, simulation time, and accuracy.
- 2009 (6-months internship) Visiting researcher, Institute for Integrated Micro and Nano Systems, the University of Edinburgh, UK.
Simulation of SPAD detector with application to fluorescence lifetime imaging microscopy.
 Development of the simulation model of a SPAD-based detector and experimental setup used to capture FLIM image. This interdisciplinary project combined computer science (simulation), physics (experiment setup) and electronics (SPAD model).
- 2006–2010 (PhD project) PhD student, University of Trento and Fondazione Bruno Kessler, Italy.
Simulation modeling and the optimal design of single-photon detectors for time-domain fluorescence measurements.
 Development of a computational model of time-resolved fluorescence experiments, taking into consideration both biological processes in the sample and physical processes in the optical detector. Within the project I also performed acquisition and interpretation of experimental data and gained a hands-on experience with fluorescence measurement equipment.
- 2006 (5-month internship) Internship student, Department of Information and Communication Technology, University of Trento, Italy.
Analytical and simulative techniques for the evaluation of the use of directional antennas in WLAN/WMAN networks.
 In this project I extended and improved an event-driven simulator of wireless networks based on the IEEE 802.11 standard. From this work I gained a deep insight into the operating principles of wireless networks, and also extended my experience in C++ programming.
- 2005 Research assistant, Department of Systems Analysis, Belarusian State University.
Simulation models of energy transfer and relaxation processes in complex molecular systems.
 This project has been dedicated to the development of simulation models of different energy transfer processes in complex molecular systems.
- 2003 Scientific assistant, Department of Systems Analysis, Belarusian State University.
Development of methods and algorithms of statistical analysis of biomolecular systems.
 In this project I have developed a number of models of energy transfer processes in idealized molecular systems. The project also included a neural-network based recognition of models and their parameters.

^{*} Single-photon avalanche diode
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