Paulo E. P. Burke

São Carlos, São Paulo, Brazil
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28 years old, married

EDUCATION

Ph.D. Student, Computational Biology, University of São Paulo (Current)
Advisor: Luciano da F. Costa, Ph.D.

M.S., Computer Science, Federal University of São Paulo, 2016
Dissertation: *Whole-Cell Representation Using Complex Networks*
Advisors: Marcos G. Quiles, Ph.D., Claudia B. L. Campos, Ph.D.

B.A, Science and Technology with focus on Biotechnology, Federal University of São Paulo, 2014

1 year of Computer Engineering, ETEP (Technical School Professor Everardo Passos), 2011

Technical in Web Design, ETEP (Technical School Professor Everardo Passos), 2011

TEACHING EXPERIENCE

Monitor, Federal University of São Paulo, 2016
Federal University of São Paulo
Courses: Programming Logic, Computational Modeling

Invited Speaker, University of São Paulo, 2018
Summer School on Bioinformatics
Courses: Introduction to Linux, Complex Networks in Biological Systems

Invited Speaker, University of São Paulo, 2019
Summer School on Bioinformatics
Courses: Introduction to Molecular Biology

Invited Speaker, University of São Paulo, 2020
Summer School on Bioinformatics
Courses: Molecular Modeling and Dynamics

RESEARCH EXPERIENCE

Scientific Internship on Complex Networks 2013-2014
Worked on the development of a Complex Network Visualization Tool under the supervision of Professor Marcos G. Quiles at the Federal University of São Paulo.

Scientific Internship on Molecular Dynamics 2012-2013
Computational screening of inhibitors for CRISPR using Molecular Dynamics under the supervision of Professor Martin Wurtelle at the Federal University of São Paulo.

Scientific Internship on Molecular Biology 2012-2013
Heterogeneous protein expression and structural characterization of the CRISPR system from thermophilic organisms under the supervision of Professor Martin Wurtelle at the Federal University of São Paulo.

Scientific Internship on Orbital Dynamics 2011-2012
Atmospheric re-entrance of debris simulation under the supervision of Marcelo Lopes at the National Institute of Space Research.

PUBLICATIONS

Burke, P.E.P., Costa, L.d.F., Accelerated Simulation of Large Reaction Systems Using a Constraint-Based Algorithm. arXiv (2020)

Burke, P.E.P., Campos, C.B.d.L., Costa, L.d.F. et al. A biochemical network modeling of a whole-cell. Sci Rep 10, 13303 (2020). https://doi.org/10.1038/s41598-020-70145-4

Burke, Paulo E. P.; Comin, Cesar Henrique ; Nascimento, Filipi ; Costa, Luciano da F. . Biological Networks Border Detection. Integrative Biology, v. 9, p. 947-955 (2017).

Burke, Paulo E. P.; Campos, Claudia B. de L.; Quiles, Marcos G. . Whole-Cell Representation Using Complex Networks. Master's Dissertation, Federal University of São Paulo (2016).

Waltemath, Dagmar; Karr, Jonathan; Bergmann, Frank; Chelliah, Vijayalakshmi; Hucka, Michael; Krantz, Marcus; Liebermeister, Wolfram; Mendes, Pedro; Myers, Chris; Pir, Pinar; Alaybeyoglu, Begum; Aranganathan, Naveen; Baghalian, Kambiz; Bittig, Arne; Burke, Paulo;

Cantarelli, Matteo; et al. ; Toward community standards and software for whole-cell modeling. IEEE Transactions on Biomedical Engineering , v. PP, p. 1-1 (2016).

Carvalho, Luiz M. F. ; Santos, Leonardo B. L. ; Burke, Paulo E. P. ; Quiles, Marcos ; Silveira, Waldemir de C. . A geographically-aware complex network approach for foot-and-mouth disease phylodynamics. 6th International Conference on Nonlinear Science and Complexity (2016).

Burke, Paulo E. P.; Pereira, Alisson R. ; Santos, Denilson P. S. dos . Modularity and Computational Performance of Genetic Algorithms. Brazilian Conference on Dynamics, Control and Applications, p. 266 (2011).

PARTICIPATION IN CONFERENCES

Intelligent Systems for Molecular Biology. "Towards Homogeneous Modeling and Simulation of Whole-Cells" (2019). recorded talk

Conference on Complex Systems. "Simulation of Biochemical Systems Using Constraint-Based Methods and Complex Networks" (2018).

X-meeting 2017. "Group-Directed Biasing Effects on Topological Properties of PPI Networks" (2017).

COMBINE 2015. "The Whole-Cell Network of *Mycoplasma genitalium*" (2015).

Science and Technology Week. "Representation and Simulation of Cells" (2015).

Workshop on Biotechnology – Unifesp. "Whole-Cell Representation and Analysis of Mycoplasma genitalium Organism Using Complex Networks" (2014).

III Workshop and School on Dynamics, Transport and Control in Complex Networks – ComplexNet. "Whole-Cell Representation and Analysis of *Mycoplasma genitalium* Organism Using Complex Networks" (2014).

SICINPE. "Analysis and Simulation of Atmospheric Re-entrance" (2012).

DINCON. Modularity and Computational Performance of Genetic Algorithms (2011.)

ADDITIONAL COURSES

Nonlinear Time Series Analysis and Complex Networks in the Big Data Era, Institute of Theoretical Physics, UNESP, Brazil.

Circadian Ritimicity, University of São Paulo, Brazil.

Algorithms and Techniques for Genome Assembly, State University of Campinas, Brazil.

Biomolecular Modeling Across Spatial and Temporal Scales, Federal University of ABC, Brazil.

Modelling electronic energy transfer, Federal University of ABC, Brazil.

Introduction to Artificial Intelligence, Stanford University, USA. (on-line)

Evolutionary Computation, National Institute of Space Research, Brazil.

GRANTS AND AWARDS

Travel Fellowship Award, ISMB, Switzerland, 2019

Best Presentation Award, Graduate Program on Bioinformatics' Workshop, 2019

Whole-Cell Summer School Grant, USA, 2015

Whole-Cell Summer School Grant, Germany, 2015

Regional Programming Marathon Finalist, 2014

POSITIONS

International Society of Computational Biology – Regional Student Group (2017-2018)

Student Representative at the Graduate Program in Bioinformatics, University of São Paulo (2019-2020)

Coordinator at Summer School on Bioinformatics, University of São Paulo (2019-2020)

RELEVANT SKILLS

Programming skills in C++ and Python

Wet lab experience in heterogeneous protein expression

Design and Web Design

Speak Portuguese, English and Spanish

Ballroom Dancing