Venelin Mitov

Data Scientist, Ph.D.

upon request
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`https://venelin.github.io`

A mathematician fascinated by biology, I love programming and I am passionate about discovering patterns in complex data.

Curriculum Vitae

Employment

2019–2020 **Scientific Assistant II**, Computational Evolution group, Department of Biosystems Science and Engineering (D-BSSE), ETH Zurich.
Modeling stem-cell development using phylogenetic comparative methods.

2014–2018 **Scientific Assistant I**, Computational Evolution group, D-BSSE, ETH Zurich, Ph.D. thesis: Phylogenetic comparative methods in the era of big data.
supervised by Prof. Dr. Tanja Stadler

2010–2011 **Lead performance engineer**, Adhoc International, Basel.
Project leadership in performance testing of e-banking web applications.

2006–2010 **Performance engineer**, Adhoc International, Basel.
Development and execution of performance tests for web applications.

2005 **Software engineer (internship)**, Adhoc International, Basel.
Design and implementation of Java-based test automation tools for web applications.

2003–2004 **System administrator**, University St. Kliment Ohridski, Sofia, Bulgaria.

Education

2011–2013 **M.Sc. student**, Computational Biology and Bioinformatics, ETH Zurich, Switzerland, Thesis: Transfer learning of genome wide transcription dynamics during a malaria infection.

2004–2005 **International exchange (Erasmus) student**, DESS, Networks and Telecommunications, University Louis Pasteur, Strasbourg, France.
Included as part of B.Sc. studies.

2000–2005 **B.Sc. student**, Computer Science, University St. Kliment Ohridski, Sofia, Bulgaria.

Nominations and Scholarships

2018 **Nomination for the Silver Medal of ETH Zurich for outstanding doctoral thesis**.
Six nominated candidates from D-BSSE will be evaluated for the award on December 18th 2019.

2004-2005 **Scholarship for one year studies in France in the framework of the student exchange program "Erasmus"**.
Based on excellent academic record and knowledge of French.

2000-2004 **Scholarship for B.Sc. studies**.
Based on excellent entry exams and academic record.

Publications

See `https://venelin.github.io/publications`.

Grants

2015 **Funding for the first "Taming the BEAST" workshop**, Swiss Universities Conference (SUK) doctoral program 2013-2016, 25'000 CHF.

Projects

See https://venelin.github.io/projects.

Other contributions

2019 Co-organiser of the seminar series "Methods & Beers", https://methods-and-beers.ch.

2016 Co-organiser of the first "Taming the BEAST" workshop, https://taming-the-beast.org.

2015 Review of the article "Predicting Microbial Traits with Phylogenies", Systematic Biology.

Skills

Modeling / machine learning methods:

- Multivariate regression and classification: linear regression, logistic regression, support vector machines, neural networks;
- Convex optimization: Gradient descent, Alternating direction method of multipliers;
- Monte Carlo simulation: reversible jump Markov Chain Monte Carlo sampling;
- Dimensionality reduction and regularization: Ridge, Lasso, Principal Component Analysis; self-organizing maps;
- Population dynamics: Ordinary differential equations (ODE) models;
- Computer assisted drug design: virtual molecular screening and molecular dynamics simulation;
- Graphical models: Bayesian networks;
- Stochastic models: Branching processes, Brownian motion (BM) and Ornstein-Uhlenbeck (OU) processes, Gaussian models.

Computater science:

- Data structures and algorithms;
- Programming languages: Expertise in R, C++, Java, Unix shell, SQL; Notions about C#, Matlab, Python;
- Libraries: STL, Armadillo, alglib;
- Parallel computing: OpenMP, MPI, LSF;
- Data visualization: ggplot2.

Other skills:

- Project management;
- Scientific writing, documentation and presentation skills;
- Languages: English and French – fluent, German – C1, Bulgarian – native.

Interests and hobbies

Playing the piano, swimming, volleyball, hiking, bicycle touring.

References

Upon request.