

# Venelin Mitov

Data Scientist, Ph.D.

📧 upon request

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🌐 <https://venelin.github.io>



*I am a mathematician and computer scientist, fascinated by  
biology and passionate about analysing complex data.*

## Curriculum Vitae

### Employment

- 2020–present **Modeling and Simulation Scientist**, IntiQuan GmbH, Basel.  
Pharmacokinetic/Pharmacodynamic modeling of drug-drug interactions in malaria clinical trial data.
- 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 18<sup>th</sup> 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.

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## Projects

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

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## 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.

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## Skills

- Modeling / machine learning methods:
- Population pharmacokinetic and pharmacokinetic-pharmacodynamic (PKPD) models models;
  - Non-linear mixed effect (NLME) models;
  - 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.
- Computational 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;
  - PKPD modeling: co-author of IntiQuan IQRtools, notions in Icon NONMEM and Lixoft MONOLIX.
- Other skills:
- Project management;
  - Scientific writing, documentation and presentation skills;
  - Languages: English and French – fluent, German – B1 (certified by FIDE), Bulgarian – native.

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## Interests and hobbies

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

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## References

Upon request.