

Aurélien Rizk
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Born on April 7th , 1984
French citizenship

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Education

2007–2011	PhD student <i>Temporal logic constraint solving for the analysis of biological systems</i> Under supervision of François Fages, completed on 06/06/2011 INRIA Paris-Rocquencourt
2006–2007	Master 2 in Bioinformatics and Biostatistics <i>With best honors, Rank 1st</i> Université Paris-Sud XI, Orsay
2005–2006	2nd year of Magistère Informatique et Télécommunications <i>Predoctoral diploma in Computer Science</i> École Normale Supérieure de Cachan, brittany extension Master 1 in Computer Science <i>With honors, Rank 3rd</i> Université of Rennes I, France
2004–2005	1st year of Magistère Informatique et Télécommunications École Normale Supérieure de Cachan, brittany extension Bachelor Degree in Computer Science <i>With honors, Rank 5th</i> Université of Rennes I
2001–2004	Preparatory Classes <i>A 2 or 3 years extensive study course in mathematics and physics to prepare for the selective exams to the French Grandes Ecoles</i> <i>Admitted to the École Normale Supérieure de Cachan</i> Lycée Saint Louis, Lycée Fénelon, Paris
2001	Baccalauréat Scientifique Le Havre

Research Experience

2007–2010	PhD student (INRIA Paris-Rocquencourt, France) <i>Temporal logic constraint solving for the analysis of biological systems</i> Under supervision of François Fages INRIA Paris-Rocquencourt
Summer 2006 3 months	Lab training period (Brandeis University, Waltham/Boston, MA) <i>Reverse engineering algorithms for inferring genetic networks: A novel approach using discrete Jacobians</i> Under supervision of Prof. Jacques Cohen
Summer 2005 9 weeks	Lab training period (IMAG Grenoble, France) <i>In PLAGIAGE Project. Application of Constraint Logic Programming to biological regulatory networks : revisiting the establishment of the Dorsoventral pattern during embryonic development of Drosophila melanogaster.</i> Under supervision of Prof. Laurent Trilling

Teaching experience

2010 **Teaching assistant in computer science at Université Versailles Saint Quentin**
Introduction to programming for undergraduate students (36h)

Skills

Computer science: temporal logic, model checking, graph theory, algorithms, programming, operating systems, architecture, software engineering, computability, computational complexity theory.

Bioinformatics: systems biology (mathematical modelling, parameter optimization, robustness and sensitivity analysis), genetic regulatory network inference, structural prediction of biological molecules, phylogenetics, sequence alignment.

Biology: Cell biology, genomics.

Synthetic biology: I am a member of the Paris team which participated in the iGEM 2007 synthetic biology competition and was awarded the first prize on foundational research

High performance computing: I implemented an evolution strategy for kinetic parameter search on a one thousand processors computer cluster using MPI.

Computational fluid dynamics: (as a hobby) I participated in the development of a real time fluid simulation based on the Navier-Stokes equations for incompressible fluids. (application available for iOS devices at <http://www.windtunnelapp.com>)

Programming languages: C, C++, Objective-C, Python, Java, Ocaml, Prolog, Lisp, MATLAB, MPI

Languages: English: fluent (Toeic 955/990); French: mother tongue; German : notions.

Publications

Journal articles

- Efficient synthesis of a class of Boolean programs from I-O data: Application to genetic networks. Ruth Charney, Jacques Cohen, **Aurélien Rizk**. Discrete Applied Mathematics, 159(6):410-419, March 2011.
- Design, Optimization and Predictions of a Coupled Model of the Cell Cycle, Circadian Clock, DNA Irinotecan Metabolism and Exposure Control under Temporal Logic Constraints. Elisabetta De Maria, François Fages, **Aurélien Rizk** and Sylvain Soliman. Theoretical Computer Science. 412(21):2108-2127, May 2011.
- Continuous valuations of temporal logic specifications with applications to parameter optimization and robustness measures, **Aurélien Rizk**, Grégory Batt, François Fages and Sylvain Soliman, Theoretical Computer Science. 412(26):2827-2839, May 2011.
- A general computational method for robustness analysis with applications to synthetic gene networks, **Aurélien Rizk**, Grégory Batt, François Fages and Sylvain Soliman, Bioinformatics, ISMB09/ECCB09 Special Issue, 25(12):169-178, June 2009.

- On Temporal Logic Constraint Solving for the Analysis of Numerical Data Time series. François Fages and **Aurélien Rizk**. Theoretical Computer Science. 408(1):55-65, November 2008.

International peer-reviewed conferences

- From Model-Checking to Temporal Logic Constraint Solving. François Fages and **Aurélien Rizk**. Proc of 15th international Conference on Principles and Practice of Constraint Programming, CP'09. LNCS, 5732:319-334, 2009.
- On a Continuous Degree of Satisfaction of Temporal Logic Formulae with Applications to Systems Biology. **Aurélien Rizk**, Grégory Batt, François Fages and Sylvain Soliman. Computational Methods in Systems Biology CMSB'08. Springer-Verlag, LNCS, 5307:251-268, May 2008.
- On the Analysis of Numerical Data Time Series in Temporal Logic. François Fages and **Aurélien Rizk**. Computational Methods in Systems Biology, CMSB'07 Edinburgh. Springer-Verlag LNBI 4695:48-63, 2007.

Workshops

- Analyse de Séries Temporelles par Résolution de Contraintes de Logique Temporelle. François Fages and **Aurélien Rizk**. Actes des troisièmes Journées Francophones de Programmation par Contraintes, JFPC 08.
- Analyzing Biological Data Time Series in Constraint-LTL, Francois Fages, **Aurélien Rizk**, Workshop on Constraint-Based Methods for Bioinformatics 2007

References

- François Fages - francois.fages@inria.fr
Senior Research Scientist at INRIA Paris-Rocquencourt, head of the Contraintes group.
PhD supervisor (2007-2011)
- Alain Denise - alain.denise@lri.fr
Professor in the bioinformatics group at Université Paris-Sud 11.
Supervisor at the Master of Bioinformatics and Biostatistics (2006-2007)
- Jacques Cohen - jc@cs.brandeis.edu
Professor of Computer Science at Brandeis University.
Internship supervisor (2006)