

PERSONAL DETAILS

Birth May 02, 1986 in Strasbourg, France (French nationality)
Currently Assistant Professor,
 Institut de Recherche en Informatique de Toulouse,
 Université Paul Sabatier, 31400, Toulouse, France.
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APPOINTMENTS

Assistant Professor Start - Sept. 2015
IRIT, Toulouse, France

Member of ADRIA team at IRIT and AOC joint project team between IRIT and IMT.

Post-doc in Applied Mathematics Oct. 2014 - Jul. 2015
Technion, Haifa, Israel

Supervisor: Shoham Sabach. Large scale convex optimization.

Post-doc in Applied Mathematics Jan. 2014 - Sep. 2014
LAAS-CNRS, University of Toulouse, France

Supervisors: Didier Henrion and Jean-Bernard Lasserre. Polynomial optimization for inverse control.

EDUCATION

Ph.D. in Applied Mathematics Sept. 2010 - Dec. 2013
Center for Computational Biology, Mines ParisTech, Curie Institute, INSERM U900, France

Supervisor: Véronique Stoven. Machine learning in computational biology.

Engineering degree (M.Sc.) Sept. 2006 - Jul. 2010
Mines ParisTech, France

Computer science, optimization, statistics. Majoring in Geostatistics.

PROJECTS

ALAPAGE 2017-2018
CNRS-MASTODONS, CIMI Labex

Algebra and approximation for machine learning (project leader)

Approximate structured learning 2017-2018
CIMI Labex

Formalizing approximation processes in structured learning with applications in discourse processing.

ACADEMIC ACTIVITIES

SCIENTIFIC EVENTS

CIMI thematic semester *Toulouse* 2019
 Member of the organization committee of the CIMI thematic semester on statistics with geometry and topology.

French-Chilean days *Toulouse* July 2017
 President of the organizing committee of the 8-th French Chilean days on Optimization in Toulouse (60 registered attendees).

SPOT	<i>Toulouse</i>	Since 2016
	Member of the organizing committee of the Toulouse Seminar on Optimization.	
AOC	<i>Toulouse</i>	Since 2016
	Member of the organizing committee of weekly meetings and working groups.	

ADVISOR

Camille Castera	<i>Phd candidate with Jérôme Bolte and Cédric Févotte</i>	2018
	Optimization for deep learning	
Phuong Nguyen	<i>Phd candidate with Fabrice Gamboa and Mathieu Serrurier</i>	2017
	Approximation and structured learning	
Yousouf Emin	<i>Intern with Jean-Bernard Lasserre</i>	2017
	Christoffel function for singular measures	
Benoit Tran	<i>Intern with Jean-Bernard Lasserre</i>	2017
	Optimization for evaluation of the Christoffel function	
Zheng Chen	<i>Postdoc with Jérôme Bolte</i>	2016-2017
	Composite algorithms for convex optimization	
Antoine Hochart	<i>Postdoc with Jérôme Bolte</i>	2016-2017
	Perturbed sets and constraints qualification	
Frank Buijs	<i>Intern with Stergos Afantagos and Mathieu Serrurier</i>	2016
	Structured output learning for discourse processing	

REVIEWER

Bioinformatics
 Computational and Applied Mathematics
 Conference on Learning Theory (COLT)
 International Conference on Machine Learning (ICML)
 IEEE International Conference on Decision and Control (CDC)
 IEEE Transactions on Automatic Control
 IEEE Transactions on Computational Biology
 Journal of Approximation Theory
 Journal of Global Optimization
 Journal of Machine Learning Research.
 Journal of Mathematical Analysis and Applications
 Journal of Optimization Theory and Applications
 Journal of the Society for the Foundations of Computational Mathematics
 Mathematics of Operation research
 Mathematical Programming
 Neural Information Processing Systems (best reviewer award, 2015, 2017)
 Molecular BioSystems
 Optimization
 Plos One
 SIAM Journal on Optimization
 Set-Valued Analysis and Variational Analysis

COMMUNICATIONS

JOURNAL ARTICLES

BOLTE, J., HOCHART, A., AND PAUWELS, E. Qualification conditions in semi-algebraic programming. *SIAM journal on Optimization* 28, 2 (2018), 1867–1891
 PAUWELS, E., BECK, A., ELДАР, Y., AND SABACH, S. On Fienup methods for sparse phase retrieval. *IEEE transactions on Signal Processing* 66, 4 (2018), 982–991

- NGUYEN, T. P., PAUWELS, E., RICHARD, E., AND SUTER, B. W. Extragradient method in optimization: Convergence and complexity. *Journal of Optimization Theory and Applications* 176, 1 (2017), 137–162
- BECK, A., PAUWELS, E., AND SABACH, S. Primal and dual predicted decrease approximation methods. *Mathematical Programming* (2017), 1–37
- PAUWELS, E. The value function approach to convergence analysis in composite optimization. *Operations Research Letters* 44, 6 (2016), 790–795
- BOLTE, J., AND PAUWELS, E. Majorization-minimization procedures and convergence of sqp methods for semi-algebraic and tame programs. *Mathematics of Operations Research* 41, 2 (2016), 442–465
- PAUWELS, E., HENRION, D., AND LASSERRE, J.-B. Linear conic optimization for inverse optimal control. *SIAM Journal on Control and Optimization* 54, 3 (2016), 1798–1825
- BECK, A., PAUWELS, E., AND SABACH, S. The cyclic block conditional gradient method for convex optimization problems. *SIAM Journal on Optimization* 25, 4 (2015), 2024–2049
- PAUWELS, E., LAJAUNIE, C., AND VERT, J.-P. A bayesian active learning strategy for sequential experimental design in systems biology. *BMC Systems Biology* 8, 1 (2014), 102
- MIZUTANI, S., PAUWELS, E., STOVEN, V., GOTO, S., AND YAMANISHI, Y. Relating drug–protein interaction network with drug side effects. *Bioinformatics* 28, 18 (2012), i522–i528
- TABELI, Y., PAUWELS, E., STOVEN, V., TAKEMOTO, K., AND YAMANISHI, Y. Identification of chemogenomic features from drug–target interaction networks using interpretable classifiers. *Bioinformatics* 28, 18 (2012), i487–i494
- YAMANISHI, Y., PAUWELS, E., AND KOTERA, M. Drug side-effect prediction based on the integration of chemical and biological spaces. *Journal of chemical information and modeling* 52, 12 (2012), 3284–3292
- PAUWELS, E., SURDEZ, D., STOLL, G., LESCURE, A., DEL NERY, E., DELATTRE, O., AND STOVEN, V. A probabilistic model for cell population phenotyping using hcs data. *PLoS ONE* 7, 8 (08 2012), e42715
- PAUWELS, E., STOVEN, V., AND YAMANISHI, Y. Predicting drug side-effect profiles: a chemical fragment-based approach. *BMC bioinformatics* 12, 1 (2011), 169. <http://www.biomedcentral.com/content/pdf/1471-2105-12-169.pdf>
- YAMANISHI, Y., PAUWELS, E., SAIGO, H., AND STOVEN, V. Extracting sets of chemical substructures and protein domains governing drug-target interactions. *Journal of chemical information and modeling* 51, 5 (2011), 1183–1194

INTERNATIONAL CONFERENCE PROCEEDINGS

- PAUWELS, E., BACH, F., AND VERT, J.-P. Relating leverage scores and density using regularized christoffel functions. In *Advances in Neural Information Processing Systems* (2018)
- PAUWELS, E., AND LASSERRE, J. B. Sorting out typicality with the inverse moment matrix sos polynomial. In *Advances in Neural Information Processing Systems* (2016), pp. 190–198
- PAUWELS, E., HENRION, D., AND LASSERRE, J.-B. Inverse optimal control with polynomial optimization. In *Annual Conference on Decision and Control (CDC)* (2014), IEEE, pp. 5581–5586

BOOK CHAPTERS

PAUWELS, E., HENRION, D., AND LASSERRE, J.-B. Positivity certificates in optimal control. In *Geometric and Numerical Foundations of Movements*, J.-P. Laumond, N. Mansard, and J.-B. Lasserre, Eds. SPRINGER, 2017. To appear in march

HENRION, D., AND PAUWELS, E. Linear conic optimization for nonlinear optimal control. In *Advances and Trends in Optimization with Engineering Applications*, T. Terlaky, M. Anjos, and S. Ahmed, Eds. SIAM, 2017. To appear in april

WORKING PAPERS

BOLTE, J., CHEN, Z., AND PAUWELS, E. The multiproximal linearization method for convex composite problems. Tech. rep., 2017. Submitted in june 2017

LASSERRE, J.-B., AND PAUWELS, E. The empirical christoffel function with applications in machine learning. Tech. rep., 2017. Under minor revision in *Advances in Computational Mathematics*

LASSERRE, J.-B., PAUWELS, E., AND PUTINAR, M. Data analysis from empirical moments and the christoffel function. Tech. rep., 2018. Submitted

SAGNOL, G., AND PAUWELS, E. An unexpected connection between bayes a-optimal designs and the group lasso. Tech. rep., 2018. Submitted

CONFERENCES, WORKSHOPS AND SEMINARS

Network and Optimization Seminar, October 2018. Amsterdam, Netherlands.

International Conference on Mathematical Programming, July 2018. Bordeaux, France.

Séminaire d'analyse non linéaire et d'optimisation, May 2018, Avignon, France.

Zalando Research Seminar, April 2018, Berlin, Germany.

Workshop Stat Math Appli, Septembre 2017. Fréjus, France.

Conference on Neural Information Processing Systems, December 2016. Barcelona, Spain.

Continuous Optimization: Challenges and Applications, an international workshop celebrating Ronny Ben-Tal's 70 birthday, September 2016. Technion, Haifa, Israel.

International Conference on Continuous Optimization, August 2016, Tokyo, Japan.

Wokshop on Geometric and Numerical Foundations of Movements, November 20 2015. LAAS-CNRS, Toulouse, France.

International Symposium on Optimization, July 2015, Pittsburgh USA.

MIA-T seminar, Sep. 23 2016, INRA Toulouse, France.

Mini-workshop on optimization. LAAS CNRS, June 2016, Toulouse, France.

Séminaire Parisien d'Optimisation, June 2016, IHP, Paris, France.

Journées SMAI-MODE, Mars 2016, ENSEEIHT, Toulouse, France.

SPOT seminar, September 2015, Toulouse France

Nonlinear Analysis and Optimization seminar, Jan. 18 2015, Mathematics Faculty, Technion, Haifa, Israël.

MIA-T seminar, February 14 2014, INRA Toulouse, France.

Identification of chemogenomic features from drug-target interaction networks using interpretable classifiers. ECCB 2012, Basel, Switzerland.

Modeling cell populations in high content screening using copulas. Poster, NIPS 2011 Workshop on Copulas in Machine Learning, Grenada, Spain.

Mixture models for cell population phenotyping. 2nd Workshop on Bioinformatics for Medical and Pharmaceutical Research, 2011, Institut Curie, France

Analyse statistique de liens entre les espaces moléculaires et phénotypiques. Séminaire maths et systèmes, January 2011, Mines ParisTech, France