

## DÉTAILS PERSONNELS

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*Naissance* 2 mai 1986 à Strasbourg, France  
*Position actuelle* Maître de conférences,  
 Institut de Recherche en Informatique de Toulouse,  
 Université Paul Sabatier, 31400, Toulouse, France.  
*Web* edouard.pauwels@irit.fr, <http://cbio.ensmp.fr/~epauwels>

## AFFECTATIONS

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**Maître de conférences** Sept. 2015 - Pres.  
*IRIT, Toulouse, France*  
 Collaboration à l'université Paul Sabatier entre les instituts d'Informatique (IRIT) et de Mathématiques (IMT).  
**Post-doctorant en Mathématiques Appliquées** Oct. 2014 - Jul. 2015  
*Technion, Haifa, Israel*  
 Encadrant : Shoham Sabach. Optimisation convexe de grande taille.  
**Post-doctorant en Mathématiques Appliquées** Jan. 2014 - Sept 2014  
*LAAS-CNRS, Université de Toulouse, France*  
 Encadrants : Didier Henrion et Jean-Bernard Lasserre. Optimisation polynomiale pour le contrôle inverse.

## FORMATION

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**Doctorant en Mathématiques Appliquées** Sept. 2010 - Dec. 2013  
*Center for Computational Biology, Mines ParisTech, Institut Curie, INSERM U900, France*  
 Encadrant : Véronique Stoven. Apprentissage statistique en biologie computationnelle.  
**Elève ingénieur** Sept. 2006 - Jul. 2010  
*Mines ParisTech, France*  
 Informatique, optimisation, statistiques. Option Géostatistiques.

## PROJETS

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**ALAPAGE** 2017-2018  
*CNRS-MASTODONS, Labex CIMI*  
 Algèbre et optimization pour l'apprentissage (porteur du projet).  
**Approximation et apprentissage structuré** 2017-2018  
*Labex CIMI*  
 Formalisation du processus d'approximation en apprentissage structuré et application à l'analyse de discours.

## SERVICES ACADÉMIQUES

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### EVÈNEMENTS SCIENTIFIQUES

**Semestre thématique CIMI** *Toulouse* 2019  
 Membre du comité d'organisation du semestre thématique CIMI "statistics with geometry and topology".  
**Journées Franco-Chiliennes** *Toulouse* Juillet 2017

President du comité d'organisation des 8-èmes journées Franco-Chiliennes d'optimisation (60 participants enregistrés).

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| <b>SPOT</b>   | <i>Toulouse</i> | Depuis 2016 |
| Membre du comité d'organisation du Séminaire Pluridisciplinaire d'Optimisation de Toulouse. |                 |             |
| <b>AOC</b>  | <i>Toulouse</i> | Depuis 2016 |
| Membre du comité d'organisation du groupe de travail.                                       |                 |             |

## ENCADREMENT

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| <b>Camille Castera</b>                                       | <i>Doctorant avec Jérôme Bolte et Cédric Févotte</i>         | 2018      |
| Optimization pour l'apprentissage profond                    |  |           |
| <b>Phuong Nguyen</b>   | <i>Doctorant avec Fabrice Gamboa and Mathieu Serrurier</i>   | 2017      |
| Approximation et apprentissage structuré                     |  |           |
| <b>Yousouf Emin</b>  | <i>Stagiaire avec Jean-Bernard Lasserre</i>                  | 2017      |
| Fonction de Christoffel pour les mesures singulières         |  |           |
| <b>Benoit Tran</b>   | <i>Stagiaire avec Jean-Bernard Lasserre</i>                  | 2017      |
| Optimisation pour l'évaluation de la fonction de Christoffel |  |           |
| <b>Zheng Chen</b>  | <i>Postdoctorant avec Jérôme Bolte</i>                       | 2016-2017 |
| Algorithmes composites pour l'optimisation convexe           |  |           |
| <b>Antoine Hochart</b>                                       | <i>Postdoctorant avec Jérôme Bolte</i>                       | 2016-2017 |
| Ensembles perturbés et qualification de contraintes          |  |           |
| <b>Frank Buijs</b>   | <i>Stagiaire avec Stergos Afantagos et Mathieu Serrurier</i> | 2016      |
| Apprentissage structuré pour l'analyse de discours           |  |           |

## RAPPORTEUR

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

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### JOURNAUX

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
- TABEL, 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

## ACTES DE CONFÉRENCES

- 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

## CHAPITRES D’OUVRAGES

- 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

## RAPPORTS DE TRAVAUX EN COURS

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 ET SÉMINAIRES

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