Xavier Dupuis

Institut de Mathématiques de Bourgogne
UMR 5584 CNRS - Université de Bourgogne
21000 Dijon, France

xavier.dupuis@u-bourgogne.fr
http://xdupuis.perso.math.cnrs.fr
+33 3 80 39 58 32

Born on 6 September 1986 in Besançon, France

EDUCATION AND POSITIONS

Université de Bourgogne - Dijon, France (since September 2016)

Maître de conférences (associate professor) at Institut de Mathématiques de Bourgogne in the team SPOC (Statistics, Probability, Optimization, Control).
Research interests: Optimization, numerical methods, machine learning

LUISS University - Rome, Italy (January 2015 - August 2016)

Postdoctoral research fellow in the Department of Economics and Finance.
Research interests: Infinite dimensional optimal control, dynamic programming
Collaborations: F. Gozzi

Inria Paris - Rocquencourt, France (December 2013 - December 2014)

Postdoctoral research fellow in the team Mokaplan.
Research interests: Variational problems in economics, numerical methods
Collaborations: J.-D. Benamou, G. Carlier

Ecole Polytechnique, France (2010 - 2013)

PhD in Applied Mathematics, 2013.

PhD thesis in the team Commands (Inria Saclay) at CMAP (Ecole Polytechnique).
Title: Optimal control of differential equations with – or without – memory
Jury: J.F. Bonnans (supervisor), U. Boscain (examiner), J.-B. Caillau (president), P. Cannarsa (referee), J.-M. Coron (referee), F. Crauste (examiner)
Defense: 13 November 2013, Ecole Polytechnique

Imperial College London, UK (2009 - 2010)

MSc in Mathematics as Erasmus student during the academic year 2009-2010.

Master (M2) thesis in the group DynamIC of the Department of Mathematics.

Ecole Normale Supérieure de Lyon, France (2006 - 2010)

Master's degree in Mathematics (Master MAIM, ENS Lyon and Université Lyon 1), 2010.

Agrégation de Mathématiques, 2009.

Bachelor's degree in Mathematics (Université de Lyon 1), 2007.

Admission as student - civil servant in Mathematics, 2006.

PUBLICATIONS

M. Bogdan, X. Dupuis, P. Graczyk, B. Kołodziejek, T. Skalski, P. Tardivel, M. Wilczyński. *Pattern recovery by SLOPE.* arXiv:2203.12086, 2022.

X. Dupuis, P. Tardivel. *Proximal operator for the sorted ℓ_1 norm: Application to testing procedures based on SLOPE.* J. Statist. Plann. Inference 221, 1-8, 2022.

E. Calzola, E. Carlini, X. Dupuis, F.J. Silva. *A semi-Lagrangian scheme for Hamilton-Jacobi-Bellman equations with oblique boundary conditions.* arXiv:2109.10228, 2021.

X. Dupuis, S. Vaiter. *The Geometry of Sparse Analysis Regularization.* arXiv:1907.01769, 2019.

G. Carlier, X. Dupuis. *An iterated projection approach to variational problems under generalized convexity constraints.* Appl. Math. Optim., 76(3), 565-592, 2017.

J-D. Benamou, X. Dupuis. *Semi-discrete principal-agent problem.* Jupyter Notebook, 2016.

J.F. Bonnans, X. Dupuis, L. Pfeiffer. *Second-order necessary conditions in Pontryagin form for optimal control problems.* SIAM J. Control Optim., 52(6):3887-3916, 2014.

J.F. Bonnans, X. Dupuis, L. Pfeiffer. *Second-order sufficient conditions for strong solutions to optimal control problems.* ESAIM Control Optim. Calc. Var., 20(3):704-724, 2014.

X. Dupuis. *Optimal control of leukemic cell population dynamics.* Math. Model. Nat. Phenom., 9(1):4-26, 2014.

J.F. Bonnans, C. de la Vega, X. Dupuis. *First and second order optimality conditions for optimal control problems of state constrained integral equations.* J. Optim. Theory Appl., 159(1):1-40, 2013.

TEACHING

Optimization (M1, M2), Numerical Analysis (L3, M1), Topology (L3), . . .
Associate Professor (192h/year of lectures and tutorials) at Université de Bourgogne, since 2016.

Mathematical Methods for Economics and Finance
Teaching Assistant for the course of Prof. F. Gozzi at LUISS University (Italy), 2015-2016.

Numerical Analysis and Optimization
Teaching Assistant for the course MAP431 at Ecole Polytechnique (France), 2010-2013.

Colles of Mathematics
Tutor for the weakly oral examinations in Mathematics in MPSI (1^{st} year of preparatory classes CPGE) at Lycée du Parc (Lyon, France), 2007-2009.

SKILLS

Languages
French (native language), English (fluent), Italian (basic), German (notions)

Computer
Python and Jupyter Notebook, Matlab/Scilab, R, Git