

Vassilis Apidopoulos

Post-doctoral researcher

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Personal information

Birth 30/08/1991
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Main research interests

- Optimization
- Convex analysis
- Algorithms
- Machine learning
- Inverse problems
- Dynamical systems

Research experience

- 2024– **Post-doc: "Performance & Role of Inertial Methods for Optimization in Machine learning"**
Archimedes RU - Athena RC, Athens
- 2019–2023 **Post-doc: "Theory and algorithms for Machine learning"**
Laboratory for Computational and Statistical Learning - MaLGA center, Genoa
Main collaborators : Lorenzo Rosasco, Silvia Villa
- 2016–2019 **Ph.D. in Applied Mathematics**
Institut de Mathématiques de Bordeaux, Université de Bordeaux, France.
Thesis : Inertial Gradient-Descent algorithms for convex minimization.
Advisors : Charles Dossal, Jean-François Aujol.
Date of Defense : 11th of October 2019.
Comitee : Samir Adly, Hedy Attouch, Jérôme Bolte, Guillaume Garrigos, Aude Rondepierre, Silvia Villa.

Education

- 2014–2016 **Master's Degree in theoretical and applied Mathematics, Parcours Équations aux dérivées partielles**
Université-Claude Bernard Lyon 1-École Normale Supérieure de Lyon, France.
Master's thesis : Analysis of proximal algorithms.
Advisors : Charles Dossal, Jean-François Aujol.
- 2012–2013 **Erasmus program**
Institut de Mathématiques de Jussieu, Université Pierre et Marie Curie (Paris 6), France.

2009–2014 **Degree in Mathematics**
Aristotle University of Thessaloniki, Greece.

Publications and preprints

Publications

1. Ch. Traore, V. Apidopoulos, S. Salzo, S. Villa : Variance reduction techniques for stochastic proximal point algorithms, *Journal of Optimization Theory and Applications* 2024. <https://doi.org/10.1007/s10957-024-02502-6>.
2. V. Apidopoulos, C. Molinari, L. Rosasco, S. Villa : Regularization properties of dual subgradient flow, 2023 European Control Conference (ECC), pp. 1-8, 2023. <https://doi.org/10.23919/ECC57647.2023.10178128>.
3. V. Apidopoulos, N. Ginatta, S. Villa : Convergence rates for the Heavy-Ball continuous dynamics for non-convex optimization, under Polyak-Lojasiewicz conditioning, *Journal of Global Optimization*, 2022. <https://doi.org/10.1007/s10898-022-01164-w>.
4. V. Apidopoulos, J.-F. Aujol, Ch. Dossal, A. Rondepierre : Convergence rates of an inertial gradient descent algorithm under growth and flatness conditions, *Mathematical Programming* 2021. <https://doi.org/10.1007/s10107-020-01476-3>.
5. V. Apidopoulos, J.-F. Aujol, Ch. Dossal : Convergence rate of inertial Forward-Backward algorithm beyond Nesterov’s rule, *Mathematical programming*, 2020, <https://doi.org/10.1007/s10107-018-1350-9>.
6. V. Apidopoulos, J.-F. Aujol, Ch. Dossal : The Differential Inclusion Modeling FISTA Algorithm and Optimality of Convergence Rate in the Case $b \leq 3$, *SIAM Journal on Optimization*, 2018, Vol. 28, No. 1 : pp. 551-574. <https://doi.org/10.1137/17M1128642>.
7. V. Apidopoulos, J.-F. Aujol, Ch. Dossal : An ODE-based Modeling of Inertial Forward-Backward Algorithms. *Proceedings of Signal Processing with Adaptive Sparse Structured Representations (SPARS) workshop*, 2017 ([link](#))

Preprints

1. V. Apidopoulos, T. Poggio, L. Rosasco, S. Villa: Iterative regularization for classification via hinge loss diagonal descent, submitted 2023. <https://arxiv.org/abs/2212.12675>.

Computer skills

Programs	Matlab, Scilab, Mathematica
Programming languages	Juila, Python
Others	L ^A T _E X

Teaching

- 2022-2023 Optimization and operational research, TA for coding exercises (Python) (1st year Master).
- 2021-2022 Mathematics for machine learning, TA for coding exercises (Matlab) (1st year Master).
- 2018-2019 Introduction to numerical analysis, TA for theoretical and coding exercises (Scilab) (2nd year Bachelor).
- 2017-2018 Mathematical bases for sciences, lectures and exercise sessions, (1st year Bachelor).
- 2013-2014 Algebraic structures, TA (2nd year Bachelor).

Presentations in conferences

- December 2023 Winter seminar at Archimedes research unit, Athens, Greece.
- June 2023 Workshop in Optimization at Bernoulli institute, Groningen, Netherlands.
- June 2023 European Control Conference at University Politehnica of Bucarest, Bucarest, Romania.
- January 2023 Seminar in department of mechanical engineering University of Thessaly, Volos, Greece.
- December 2022 Seminar in Mathematics department of Aristotle University, Thessaloniki, Greece.
- October 2022 Journées annuelles 2022 du GdR MOA, Nice, France.
- September 2022 International Conference on Optimization and Decision Science, Firenze, Italy.
- February 2020 Séminaire Modélisation, Optimisation, Dynamique, Limoges, France.
- December 2019 Seminar in Mathematics department of Aristotle University, Thessaloniki, Greece.
- May 2019 Congrès SMAI 2019, Guidel, France.
- October 2018 Journées annuelles 2018 des GdR MOA et MIA, Pau, France.
- May 2018 Colloque Inter'Actions 18, Lyon, France.
- April 2018 Ph.D. Students Lambda Seminar, Bordeaux, France.
- June 2017 Signal Processing with Adaptive Sparse Structured Representations (SPARS), Lisbon, Portugal.
- October 2017 Journées annuelles 2017 des GdR MOA et MIA, Bordeaux, France.

Participation in conferences

- February 2019 Workshop "Variational methods and optimization in imaging" : The mathematics of Imaging, Paris, France.
- January 2019 CIRM winter-school : The mathematics of Imaging, Marseille, France.
- January 2018 Mathematics and Image Analysis (MIA), Berlin, Germany.
- October 2016 Workshop CAVALIERI on Optimal Transport and Optimization in Imaging, Paris, France.

December 2015 Winter school "Nonlinear Function Spaces in Mathematics and Physical Sciences", Lyon, France.

Awards & scholarships

2019-2023 Research fellowship funded from ERC-2018-COG, Efficient algorithms for sustainable machine learning-SLING, Università di Genova, Italy.

2016-2019 National scholarship for doctoral studies Institut de Mathématiques de Bordeaux (IMB), University of Bordeaux, France

Organization responsibilities

2022-2023 Organizer of the optimization bi-weekly group meeting, LCSL, Genova, Italy.

2019-2022 Organizer of the LCSL (Laboratory for Computational and Statistical Learning) weekly group meeting, LCSL, Genova, Italy.

2018-2019 Organizer of the Ph.D. Students Seminar, IMB, Bordeaux, France.

2018-2019 Co-organizer of Colloque Inter'Actions 19 in Bordeaux, for Ph.D. students in Mathematics in France.

Other

2018-2019 President of the Ph.D. students association in Bordeaux (Lambda).

Reviewing activity

Journals Mathematical Programming, Journal of Optimization Theory and Applications, Journal of Machine Learning Research, IMA Journal of Numerical Analysis, Automatica, SIAM Journal on Imaging Sciences, Journal of Non-linear and Variational Analysis

Conferences COLT 2021

Languages

Greek Mother tongue

French Fluent

English Fluent

Italian Intermediate