

List of Publications

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Papers listed by type and year. List available online in BibTeX format [here.bib](#).
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Journal articles

- [De 25b] Alberto De Marchi. “Mixed-integer linearity in nonlinear optimization: a trust region approach”. In: *Optimization Letters* (2025). doi: [10.1007/s11590-025-02190-9](https://doi.org/10.1007/s11590-025-02190-9). arXiv: [2310.17285](https://arxiv.org/abs/2310.17285).
- [DT25] Alberto De Marchi and Andreas Themelis. “A penalty barrier framework for nonconvex constrained optimization”. In: *Journal of Nonsmooth Analysis and Optimization* 5.14585 (2025). doi: [10.46298/jnsao-2025-14585](https://doi.org/10.46298/jnsao-2025-14585). arXiv: [2406.09901](https://arxiv.org/abs/2406.09901).
- [NDG25] Viktoriya Nikitina, Alberto De Marchi, and Matthias Gerdts. “Hybrid optimal control with mixed-integer Lagrangian methods”. In: *IFAC-PapersOnLine* (2025). 13th IFAC Symposium on Nonlinear Control Systems (NOLCOS). arXiv: [2403.06842](https://arxiv.org/abs/2403.06842).
- [De 24b] Alberto De Marchi. “Implicit augmented Lagrangian and generalized optimization”. In: *Journal of Applied and Numerical Optimization* 6.2 (2024), pp. 291–320. doi: [10.23952/jano.6.2024.2.08](https://doi.org/10.23952/jano.6.2024.2.08). arXiv: [2302.00363](https://arxiv.org/abs/2302.00363).
- [DM24] Alberto De Marchi and Patrick Mehlitz. “Local properties and augmented Lagrangians in fully nonconvex composite optimization”. In: *Journal of Nonsmooth Analysis and Optimization* 5 (2024). doi: [10.46298/jnsao-2024-12235](https://doi.org/10.46298/jnsao-2024-12235). arXiv: [2309.01980](https://arxiv.org/abs/2309.01980).
- [DT24] Alberto De Marchi and Andreas Themelis. “An interior proximal gradient method for nonconvex optimization”. In: *Open Journal of Mathematical Optimization* 5 (2024), pp. 1–22. doi: [10.5802/ojmo.30](https://doi.org/10.5802/ojmo.30). arXiv: [2208.00799](https://arxiv.org/abs/2208.00799).
- [Sci+24b] Luca Sciallo, Alberto De Marchi, Angelo Trotta, Federico Montori, Luciano Bononi, and Marco Di Felice. “Relativistic Digital Twin: Bringing the IoT to the future”. In: *Future Generation Computer Systems* 153 (2024), pp. 521–536. doi: [10.1016/j.future.2023.12.016](https://doi.org/10.1016/j.future.2023.12.016). arXiv: [2301.07390](https://arxiv.org/abs/2301.07390).
- [BDR23] Andreas Britzelmeier, Alberto De Marchi, and Rebecca Richter. “Dynamic and nonlinear programming for trajectory planning”. In: *IEEE Control Systems Letters* 7 (2023), pp. 2569–2574. issn: 2475-1456. doi: [10.1109/LCSYS.2023.3285746](https://doi.org/10.1109/LCSYS.2023.3285746).
- [De 23a] Alberto De Marchi. “Proximal gradient methods beyond monotony”. In: *Journal of Nonsmooth Analysis and Optimization* 4 (2023). doi: [10.46298/jnsao-2023-10290](https://doi.org/10.46298/jnsao-2023-10290). arXiv: [2211.04827](https://arxiv.org/abs/2211.04827).

- [De 23b] Alberto De Marchi. “Regularized interior point methods for constrained optimization and control”. In: *IFAC-PapersOnLine* 56.2 (2023). 22nd IFAC World Congress, pp. 1247–1252. doi: [10.1016/j.ifacol.2023.10.1747](https://doi.org/10.1016/j.ifacol.2023.10.1747). arXiv: [2210.15825](https://arxiv.org/abs/2210.15825).
- [De +23a] Alberto De Marchi, Axel Dreves, Matthias Gerdts, Simon Gottschalk, and Sergejs Rogovs. “A function approximation approach for parametric optimization”. In: *Journal of Optimization Theory and Applications* 196.1 (2023), pp. 56–77. doi: [10.1007/s10957-022-02138-4](https://doi.org/10.1007/s10957-022-02138-4).
- [De +23b] Alberto De Marchi, Xiaoxi Jia, Christian Kanzow, and Patrick Mehlitz. “Constrained composite optimization and augmented Lagrangian methods”. In: *Mathematical Programming* 201.1 (2023), pp. 863–896. doi: [10.1007/s10107-022-01922-4](https://doi.org/10.1007/s10107-022-01922-4). arXiv: [2203.05276](https://arxiv.org/abs/2203.05276).
- [De 22] Alberto De Marchi. “On a primal-dual Newton proximal method for convex quadratic programs”. In: *Computational Optimization and Applications* 81.2 (2022), pp. 369–395. doi: [10.1007/s10589-021-00342-y](https://doi.org/10.1007/s10589-021-00342-y).
- [DT22] Alberto De Marchi and Andreas Themelis. “Proximal gradient algorithms under local Lipschitz gradient continuity”. In: *Journal of Optimization Theory and Applications* 194.3 (2022), pp. 771–794. doi: [10.1007/s10957-022-02048-5](https://doi.org/10.1007/s10957-022-02048-5). arXiv: [2112.13000](https://arxiv.org/abs/2112.13000).
- [Cal+21] Francesca Calà Campana, Alberto De Marchi, Alfio Borzì, and Matthias Gerdts. “On the numerical solution of a free end-time homicidal chauffeur game”. In: *ESAIM: ProcS* 71 (2021), pp. 33–42. doi: [10.1051/proc/202171104](https://doi.org/10.1051/proc/202171104).
- [De 19] Alberto De Marchi. “On the mixed-integer linear-quadratic optimal control with switching cost”. In: *IEEE Control Systems Letters* 3.4 (2019), pp. 990–995. ISSN: 2475-1456. doi: [10.1109/LCSYS.2019.2920425](https://doi.org/10.1109/LCSYS.2019.2920425).
- [DG19b] Alberto De Marchi and Matthias Gerdts. “Free finite horizon LQR: a bilevel perspective and its application to model predictive control”. In: *Automatica* 100 (2019), pp. 299–311. ISSN: 0005-1098. doi: [10.1016/j.automatica.2018.11.032](https://doi.org/10.1016/j.automatica.2018.11.032).
- [DG18] Alberto De Marchi and Matthias Gerdts. “Traffic flow on single-lane road networks: Multiscale modelling and simulation”. In: *IFAC-PapersOnLine* 51.2 (2018). 9th Vienna International Conference on Mathematical Modelling (MATHMOD), pp. 162–167. doi: [10.1016/j.ifacol.2018.03.028](https://doi.org/10.1016/j.ifacol.2018.03.028).

Conference proceedings

- [Cia+25] Leonardo Ciabattini, Luca Sciullo, Alberto De Marchi, Lorenzo Gigli, Luciano Bononi, and Marco Di Felice. “Generative digital twin for predictive modeling in dynamic IoT scenarios”. In: *2025 IEEE International Conference on Smart Computing (SMART-COMP)*. Cork, Ireland, 2025, pp. 98–105. doi: [10.1109/SMARTCOMP65954.2025.00071](https://doi.org/10.1109/SMARTCOMP65954.2025.00071).
- [RDG24] Rebecca Richter, Alberto De Marchi, and Matthias Gerdts. “Collision avoidance using iterative dynamic and nonlinear programming with adaptive grid refinements”. In: *2024 European Control Conference (ECC)*. 2024, pp. 52–57. doi: [10.23919/ECC64448.2024.10591064](https://doi.org/10.23919/ECC64448.2024.10591064). arXiv: [2311.03148](https://arxiv.org/abs/2311.03148).

- [Sci+24a] Luca Sciullo, Alberto De Marchi, Lorenzo Gigli, Monica Palmirani, and Fabio Vitali. “AAA: A blockchain-based architecture for ethical, robust authenticated anonymity”. In: *Proceedings of the 2024 International Conference on Information Technology for Social Good*. GoodIT ’24. Bremen, Germany: Association for Computing Machinery, 2024, pp. 1–9. doi: [10.1145/3677525.3678676](https://doi.org/10.1145/3677525.3678676).
- [De 21b] Alberto De Marchi. “Augmented Lagrangian methods as dynamical systems for constrained optimization”. In: *2021 60th IEEE Conference on Decision and Control (CDC)*. 2021. doi: [10.1109/CDC45484.2021.9683199](https://doi.org/10.1109/CDC45484.2021.9683199).
- [De 20] Alberto De Marchi. “Constrained and sparse switching times optimization via augmented Lagrangian proximal methods”. In: *2020 American Control Conference (ACC)*. Denver, CO, USA: IEEE, 2020, pp. 3633–3638. doi: [10.23919/ACC45564.2020.9147892](https://doi.org/10.23919/ACC45564.2020.9147892).
- [DG20] Alberto De Marchi and Matthias Gerdts. “Sparse switching times optimization and a sweeping Hessian proximal method”. In: *Operations Research Proceedings 2019*. Ed. by Janis S. Neufeld, Udo Buscher, Rainer Lasch, Dominik Möst, and Jörn Schönberger. Cham: Springer International Publishing, 2020, pp. 89–95. ISBN: 978-3-030-48439-2. doi: [10.1007/978-3-030-48439-2_11](https://doi.org/10.1007/978-3-030-48439-2_11).
- [DG19a] Alberto De Marchi and Matthias Gerdts. “An iterative method for final time optimization in nonlinear optimal control”. In: *2019 Proceedings of the Conference on Control and its Applications*. SIAM, 2019, pp. 60–66. doi: [10.1137/1.9781611975758.10](https://doi.org/10.1137/1.9781611975758.10).
- [DG19c] Alberto De Marchi and Matthias Gerdts. “Nonsmooth Newton’s method: Some structure exploitation”. In: *ICCS 2019, LNCS 11538*. Ed. by J. M. F. Rodrigues et al. Springer, 2019, pp. 409–420. doi: [10.1007/978-3-030-22744-9_32](https://doi.org/10.1007/978-3-030-22744-9_32).
- [BDG18] Andreas Britzelmeier, Alberto De Marchi, and Matthias Gerdts. “An iterative solution approach for a bi-level optimization problem for congestion avoidance on road networks”. In: *Numerical Methods for Optimal Control Problems*. Ed. by Maurizio Falcone, Roberto Ferretti, Lars Grüne, and William M. McEneaney. Springer International Publishing, 2018, pp. 23–38. doi: [10.1007/978-3-030-01959-4_2](https://doi.org/10.1007/978-3-030-01959-4_2).
- [Bir+16] Francesco Biral, Enrico Bertolazzi, Paolo Bosetti, Alberto De Marchi, and Martin M. Hanczyc. “Optimal control of a laser source to generate a minimum time trajectory of a droplet in a liquid layer”. In: *2016 Future Technologies Conference (FTC)*. 2016, pp. 1208–1216. doi: [10.1109/FTC.2016.7821754](https://doi.org/10.1109/FTC.2016.7821754).

Theses

- [De 21a] Alberto De Marchi. “Augmented Lagrangian and Proximal Methods for Constrained Structured Optimization”. PhD thesis. Munich, Germany: University of the Bundeswehr Munich, 2021. doi: [10.5281/zenodo.4972535](https://doi.org/10.5281/zenodo.4972535).
- [De 16] Alberto De Marchi. “Modelling and optimal control of laser-driven thermocapillary motion of a droplet”. MA thesis. University of Trento, 2016. doi: [10.5281/zenodo.1481663](https://doi.org/10.5281/zenodo.1481663).

Preprints

- [Ber+25] Jeremy Bertoncini, Alberto De Marchi, Matthias Gerdts, and Simon Gottschalk. *Reinforcement learning for online hyperparameter tuning in convex quadratic programming*. 2025. arXiv: [2509.07404](https://arxiv.org/abs/2509.07404).
- [BD25] H  a T. B  i and Alberto De Marchi. *Cutting plane methods with gradient-based heuristics*. 2025. arXiv: [2511.00520](https://arxiv.org/abs/2511.00520).
- [De 25a] Alberto De Marchi. *A condensing approach for linear-quadratic optimization with geometric constraints*. 2025. arXiv: [2510.17465](https://arxiv.org/abs/2510.17465).
- [M  n+25] Etienne M  nager, Antoine Bambade, Wilson Jallet, Alberto De Marchi, and Justin Carpentier. *Contact-Implicit Inverse Dynamics*. 2025. hal: [hal-05201780](https://hal.science/hal-05201780). URL: <https://hal.science/hal-05201780>.
- [De 24a] Alberto De Marchi. *Affordable mixed-integer Lagrangian methods: optimality conditions and convergence analysis*. 2024. arXiv: [2406.12436](https://arxiv.org/abs/2406.12436).