

Lorenzo Stella

Email lorenzostella@gmail.com
Web lostella.github.io
GitHub github.com/lostella

Professional experience

- Since 10/2017 | Applied Scientist at Amazon, Amazon Development Center, Berlin (Germany).
- 2011 – 2012 | Research Analyst at COSBI, Trento (Italy).
- Analysis and simulation of stochastic models in systems biology (PK/PD, metabolic, gene regulatory networks). Collaboration with researchers and software developers to implement tools for the stochastic simulation of biological systems ([link](#)).

Education

- 2013 – 2017 | PhD in Computer, Decision and Systems Science, IMT Lucca (Italy), jointly with Department of Electrical Engineering (ESAT), KU Leuven (Belgium).
- Supervisors: [Panos Patrinos](#) (KU Leuven), [Alberto Bemporad](#) (IMT Lucca). Algorithms for large-scale nonsmooth optimization problems, with applications to optimal control, distributed optimization, machine learning, image processing, recommender systems.
- 2004 – 2011 | BSc & MSc in Computer Science, University of Florence (Italy). Thesis advisor: [Luigi Brugnano](#).

Publications

- 2018 | L. Stella, A. Themelis, and P. Patrinos. Newton-type alternating minimization algorithm for convex optimization. *ArXiv e-prints*, March 2018. Online: [link](#)
- 2017 | L. Stella, A. Themelis, and P. Patrinos. Forward-backward quasi-Newton methods for nonsmooth optimization problems. *Computational Optimization and Applications*, 67(3):443–487, 2017. Online: [link](#)
- L. Stella, A. Themelis, P. Sopasakis, and P. Patrinos. A simple and efficient algorithm for nonlinear model predictive control. In *56th IEEE Conference on Decision and Control (CDC)*, December 2017. Online: [link](#)
- 2016 | P. Latafat, L. Stella, and P. Patrinos. New primal-dual proximal algorithm for distributed optimization. In *55th IEEE Conference on Decision and Control (CDC)*, pages 1959–1964, December 2016. Online: [link](#)
- A. Themelis, L. Stella, and P. Patrinos. Forward-backward envelope for the sum of two nonconvex functions: Further properties and nonmonotone line-search algorithms. *ArXiv e-prints*, June 2016. Online: [link](#)
- 2014 | P. Patrinos, L. Stella, and A. Bemporad. Douglas-Rachford splitting: Complexity estimates and accelerated variants. In *53rd IEEE Conference on Decision and Control (CDC)*, pages 4234–4239, December 2014. Online: [link](#)
- P. Patrinos, L. Stella, and A. Bemporad. Forward-backward truncated Newton methods for convex composite optimization. *ArXiv e-prints*, February 2014. Online: [link](#)

Programming skills

- MATLAB | I worked with MATLAB since my BSc and used it on a daily basis during my PhD to implement [optimization algorithms](#) and perform numerical simulations.

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| JULIA | I learned JULIA in the Summer 2016 and used it ever since. I contribute to the package ecosystem, and intend to keep working with JULIA as I generally prefer it over MATLAB. |
| PYTHON | I am fully proficient with the language and popular scientific and machine learning libraries such as NumPy, Pandas, Scikit-learn, MXNet. |
| C | I am fully proficient with the language and often use it to implement efficient routines when this is not possible with high-level languages, like in this case . |

Software projects

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| Proximal Operators.jl | <p>JULIA package to compute the proximal operator of several functions commonly used in optimization. The purpose is to have a toolbox of efficiently implemented operators, to be used as building blocks for large scale, nonsmooth optimization algorithms such as (fast) proximal gradient methods, ADMM, and primal-dual splitting algorithms.</p> <p>Web page: github.com/kul-forbes/ProximalOperators.jl</p> |
| Proximal Algorithms.jl | <p>Generic, efficient JULIA implementations of proximal algorithms for nonsmooth optimization problems, based on the first-order primitives provided by ProximalOperators.jl.</p> <p>Web page: github.com/kul-forbes/ProximalAlgorithms.jl</p> |
| ForBES | <p>MATLAB framework to develop solvers for nonsmooth optimization, contains a library of mathematical functions to formulate problems arising in control, machine learning, image and signal processing. Contains novel, efficient, Newton-type algorithms for nonsmooth problems based on my PhD research.</p> <p>Web page: kul-forbes.github.io/ForBES</p> |

Languages

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| Native | English, Italian |
| Elementary | German (A2 level) |