Lorenzo Stella

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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

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**

L. Stella, A. Themelis, and P. Patrinos. Newton-type alternating minimization algorithm for convex optimization. Submitted, February 2017

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.

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

Proximal Operators.jl	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. Web page: `github.com/kul-forbes/ProximalOperators.jl`
Proximal Algorithms.jl	Generic, efficient Julia implementations of proximal algorithms for nonsmooth optimization problems, based on the first-order primitives provided by ProximalOperators.jl. Web page: `github.com/kul-forbes/ProximalAlgorithms.jl`
ForBES	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. Web page: `kul-forbes.github.io/ForBES`

Languages

Native	English, Italian
Elementary	German (A2 level)