# Lorenzo Stella


Born December 12, 1985 in Florence, Italy
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## Professional Experience

**Feb 2013 – now** PhD student at IMT School for Advanced Studies, Lucca (Italy) `www.imtlucca.it` and KU Leuven, Leuven (Belgium). `www.esat.kuleuven.be/stadius`

Nonsmooth optimization algorithms, applications to optimal control, distributed optimization, large-scale machine learning, image processing. Teaching assistant, exercises and laboratory sessions for the "Optimization" class, taught by Panos Patrinos, at KU Leuven.

**2011 – 2012** Research Analyst at COSBI, Trento (Italy). `www.cosbi.eu`

Analysis and simulation of stochastic models in systems biology (PK/PD, metabolic networks). Inference and analysis of gene regulatory networks. Development of tools for stochastic simulation and network analysis in C#, Python and Matlab languages.

## Education

**2008 – 2011** M.S. in Computer Science, University of Florence. Final grade: 110/110 cum laude.

Thesis supervised by Prof. Luigi Brugnano, *Efficient methods for the numerical solution of Hamiltonian problems*. Analysis of the effectiveness of numerical methods for ODEs with respect to the conservation of energy in the case of Hamiltonian systems. Efficient implementation of such techniques using a framework developed in C.

**2004 – 2008** B.S. in Computer Science, University of Florence. Final grade: 110/110.

Thesis supervised by Prof. Luigi Brugnano, *Numerical methods in Linear Algebra with applications to Google's Pagerank*. Study of the *random surfer* model and possible approaches to the computation of the stationary point of the associated Markov chain. Experimental results obtained with Matlab simulations.

## Publications

Google Scholar: `scholar.google.com/citations?user=Y3ag8YsAAAAJ`

**2016** P. Latafat, L. Stella, and P. Patrinos, *New primal-dual proximal algorithms for distributed optimization*, Proceedings of the 55th IEEE Conference on Decision and Control, Las Vegas, NV, USA, (2016)

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 preprint, (2016)

L. Stella, A. Themelis, and P. Patrinos, *Forward-backward quasi-Newton methods for nonsmooth optimization problems*, ArXiv preprint, (2016)

**2014** P. Patrinos, L. Stella, and A. Bemporad, *Douglas-Rachford splitting: complexity estimates and accelerated variants*, Proceedings of the 53rd IEEE Conference on Decision and Control, Los Angeles, CA, USA, (2014)

——, *Forward-backward truncated Newton methods for convex composite optimization*, ArXiv preprint, (2014)

## Talks and seminars

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|---|---|
| Nov. 2015 | "Proximal quasi-Newton methods for nonsmooth composite optimization problems," at the KU Leuven Optimization in Engineering Center (OPTEC), Spa, Belgium. |
| Jul. 2015 | "Accelerated L-BFGS for large scale nonsmooth convex optimization," at the 22$^{\text{nd}}$ International Symposium on Mathematical Programming (ISMP 2015), Pittsburgh, PA, USA. |
| Dec. 2014 | "Douglas-Rachford splitting: complexity estimates and accelerated variants," at the 53$^{\text{rd}}$ IEEE Conference on Decision and Control (CDC 2014), Los Angeles, CA, USA. |

## Software projects

GitHub: `github.com/lostella`

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|---|---|
| Proximal Operators.jl | Julia package to compute the proximal operator of several functions commonly used in nonsmooth optimization problems. Useful as building block to implement large scale optimization algorithms such as ADMM.<br>Web page: `github.com/kul-forbes/ProximalOperators.jl` |
| ForBES | Matlab solver for nonsmooth optimization, contains a library of mathematical functions to formulate problems arising in control, machine learning, image and signal processing.<br>Web page: `kul-forbes.github.io/ForBES` |
| libForBES | C++ framework for modeling and solving large-scale nonsmooth optimization problems, allows to interface many high-level languages (including R, Python, Julia) to a unique solver capable of addressing nonsmooth problems from several application fields.<br>Web page: `kul-forbes.github.io/libForBES` |
| libLBFGS | C library providing the structures and routines to implement the limited-memory BFGS algorithm (L-BFGS) for large-scale smooth unconstrained optimization. Contains a Mex interface to Matlab.<br>Web page: `github.com/lostella/libLBFGS` |

## Programming skills

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| Proficient | C, MATLAB, Python, Julia, Git |
| Familiar | Java, C++, C#, Haskell, SQL |

## Languages

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|---|---|
| English | Native |
| Italian | Native |
| German | Elementary |