Lorenzo Stella

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General information

Born — December 12, 1985 in Bagno a Ripoli, Florence (Italy).

Nationality — Italian, American.

Professional Experience

Sept 2015 – now — Visiting PhD student at KU Leuven, Leuven (Belgium), Departement Elektrotechniek (ESAT), Stadius division. www.esat.kuleuven.be/stadius

Teaching assistant for the Optimization class (exercises and laboratory sessions).

Feb 2013 – now — PhD student at IMT School for Advanced Studies, Lucca (Italy). www.imtlucca.it

Convex optimization, operator splitting methods. Derivation, analysis and implementation of line-search methods based on the concept of *splitting envelope* function, to tackle nonsmooth (possibly constrained) optimization problems (both convex and nonconvex) with classical smooth unconstrained techniques. Applications to optimal control problems, distributed optimization and large-scale problems arising in machine learning, image processing.

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 — MSc in Computer Science, University of Florence, 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 *ad hoc* in C.

2004 – 2008 — BSc in Computer Science, University of Florence, 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 calculation of the stationary point of the Markov chain associated with it. The approaches and algorithms presented were compared on the basis of experimental results obtained with Matlab implementations.

Publications

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

2016 Lorenzo Stella, Andreas Themelis, and Panagiotis Patrinos. Forward-backward quasi-Newton methods for nonsmooth optimization problems. *ArXiv preprint*, 2016

Puya Latafat, Lorenzo Stella, and Panagiotis Patrinos. New primal-dual proximal algorithms for distributed optimization. *Submitted to the 55th IEEE Conference on Decision and Control*, 2016

2014 Panagiotis Patrinos, Lorenzo Stella, and Alberto Bemporad. Douglas-Rachford splitting: complexity estimates and accelerated variants. *Proceedings of the 53rd IEEE Conference on Decision and Control*, 2014

Panagiotis Patrinos, Lorenzo Stella, and Alberto Bemporad. Forward-backward truncated Newton methods for convex composite optimization. *ArXiv preprint*, 2014

2013 Marco Scotti, Lorenzo Stella, Emily J. Shearer, and Patrick J. Stover. Modeling cellular compartmentation in one-carbon metabolism. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine*, 2013

Technical skills

Programming Excellent knowledge of C, Python, MATLAB. Good skills in Java, C++, C#. Familiar with Haskell, Scheme, Perl, Fortran.

Experience with the Git version control system, the Cppunit unit testing framework and Travis-CI for continuous integration.

Software projects

(GitHub: github.com/lostella)

ForBES Generic and efficient Matlab solver for nonsmooth optimization problems. The solver is provided with a library of mathematical functions used in applications, along with their gradient and proximal operations.

Web page: kul-forbes.github.io/ForBES

libForBES Framework in C++ for modeling and solving large-scale convex and nonconvex optimization problems. Started as a lower-level implementation of ForBES, to overcome the drawbacks of Matlab, it will allow to interface many high-level languages (including R, Python, Julia) to a unique solver capable of addressing nonsmooth optimization problems from several application fields.

Web page: kul-forbes.github.io/libForBES

Languages

Italian Native

English Full professional proficiency

Updated June 13, 2016