LORENZO BOLLA

SENIOR SOFTWARE ARCHITECT

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Profile

Software Engineer with background in Physics and a crush for hard (yet) unsolved problems.

Telecommunication Engineer with a strong mathematical and physical background, specifically in the field of classical optics and telecommunications.

Doctorate on Numerical Methods and proved abilities to develop complex algorithms efficiently, in both academic and business environments.

5+ years of experience in software design: highly scalable web applications, numerical intensive simulations and massively parallel data analysis.

Fluent in Python, Javascript, HTML, CSS, C/C++ (using both STL and Boost libraries), Fortran and Matlab.

Interested in other programming languages, like Haskell, Lisp and Go.

Experienced with many different libraries and frameworks: Tornado, Pandas, Disco, JQuery, ExtJS, git, MySQL, sqlite, MongoDB, nginx, and many more.

Familiar with UNIX-like (mainly Linux) and Windows OSes.

Logical thinker, able to provide effective solutions to solve difficult problems.

Great team-player & fun attitude, competent time manager, very dependable under pressure and passionately dedicated to the task.

Skills

Software Architecture

Proved experience in designing, implementing and deploying highly scalable software systems.

Software Development

Years of experience in Python development, using Tornado, Pandas, MySQL, MongoDB and many other tools. Very interested in functional programming, especially Haskell.

More

Github

StackOverflow

LinkedIn

Technical

Python	Javascript	MySQL
Haskell	JQuery	SQlite
Go	HTML/CSS	MongoDB
C/C++	ExtJS	Memcache

Experience

YouGov
Lead Python Developer

Aug 2013 - now

Design and implement scalable analysis software for market research analysis using *Python*, *Cython MongoDB*.
Development of an in-memory column-oriented DB to efficiently store and query tabular data.

RAID Research Services LLP
Senior Software Architect

May 2012 - Aug 2013

Design and implement scalable analysis software for finance using mainly *Python*, *Pandas MySQL* and *ExtJS*.
Implementation of an in-memory DB to efficiently query tabular data.
Parsing of unstructured data sources and categorization using simple machine learning techniques.

Artirix Ltd
Senior Software Engineer
April 2012 - May 2012

Design and implementation of highly scalable web search crawlers using *Python* and *Twisted*.

Zugo Ltd
Senior Python Developer
April 2011 - April 2012

Develop massively scalable web applications (using *Tornado*, *MySQL*, *MongoDB*, *nginx* on the back-end and *HTML*, *Javascript*, *CSS* on the front-end).
Experience in distributed data analysis using *MapReduce* frameworks (mainly *Disco*), *NoSQL* data stores (mainly *MongoDB*) and *AWS* solutions.
Some experience in browser extension implementation (*Firefox* and *Chrome*).

Geneity Ltd
Software Engineer
August 2008 - April 2011

Software engineer of high-performance E-gaming web applications (mainly working with Betfair, Coral, Ladbrokes and others betting companies).
Focus on high performance fund transfers (maximizing the transaction per seconds supported by the systems), application reliability (maximizing uptime), third-party usability (implementing REST and SOAP access to web applications).
Programming languages used: *Python* (2.5, 2.6), *C*, *PL/SQL* (Oracle 10g-11) for the back-end; *HTML/Javascript* for the front-end.
OS used: *Linux* (Debian, Suse and ArchLinux distributions).

Pirelli & C SpA
Optical Designer
June 2005 - August 2008

R&D in Photonic Integrated Circuits mainly based on Silicon-on-Insulator technology (SOI-PICs).
Responsible for the design of optical components for metro and access networks, with a focus on innovative solutions.
Excellent problem solving capabilities, lateral thinking and self management.
Deep experience on efficient numerical and parallel programming (SGI Altix hardware), using *C/C++*, *Fortran*, *Matlab*, *Python* languages and *OpenMP*, *MPI*, *STL* and *Boost* libraries.
Experience in patenting.

TELE System Electronic Srl
Software Engineer
March 2005 - June 2005

Consultant on hardware and software design for digital television broadcasting, including theory on transmission algorithms and computer simulations of the complete system.
Experience in programming applications for set-top-boxes, in *JAVA*.

Photon Design Ltd
Software Engineer
April 2003 - April 2004

R&D on numerical algorithms applied to the solution of electromagnetic problems.
Very deep focus on algorithms' efficiency for computationally intensive simulations. Theoretical studies on linear algebra problems, finite difference and finite elements algorithms, modal expansion techniques.
Deep experience in *C/C++* programming, both with *VC++* and *Borland* suites (along with *STL* and *Boost* libraries) and *Python* as scripting language. Basics of GUI programming.

Progetto Mantegna
Technical Support
May 2001 - April 2003

Technical assistance in the virtual reconstruction of Mantegna's paintings in the Ovetari's Chapel, Padua Italy.

Basics of image analysis and manipulation.

| *Education* | **University of Udine - Italy**
PhD | November 2002 - November 2005 |

[Thesis](#) on the numerical solution Maxwell equations in periodic dielectric devices.

| | **European Project**
FUNFOX (Project No. 004582) | September 2004 - June 2005 |

Research on semiconductor optoelectronic devices for metro core and access segments in optical networks.

| | **European Project**
PICCO (IST-1999-10361) | November 2002 - April 2003 |

Research in Optical integrated circuits, photonic crystal planar waveguides and wavelength dependent devices.

| | **University of Padova - Italy**
Laurea in Telecommunication Engineer | September 1996 - March 2002 |

Publications

Books
['Numerical Methods for Integrated Optics'](#), Lorenzo Bolla, Scholar's Press, 2013, ISBN 978-3-639-51669-2

Technical reviewer for ['Numpy 1.5 Beginners Guide'](#), PacktPub

Technical reviewer for ['Learning Scipy for Numerical and Scientific Computing'](#), PacktPub

Articles
V. Sorianello, M. Balbi, L. Colace, G. Assanto, L. Socci, **L. Bolla**, G. Mutinati, M. Romagnoli, 'Guided-wave photodetectors in Germanium on SOI optical chips', Physica E: Low-dimensional Systems and Nanostructures, [abstract](#)

M. Romagnoli, L. Socci, **L. Bolla**, et al., 'Silicon Photonics in Pirelli' (invited), *Proc. SPIE 2008*, [website](#)

T. P. Felici, D. F. G. Gallagher, **L. Bolla**, 'Automatic design and optimisation of Si nanophotonics devices using finite element frequency domain solvers', *Proc. SPIE Vol. 6475, 64750L, Integrated Optics: Devices, Materials, and Technologies XI*, 2007, [abstract](#)

M. Kotlyar, **L. Bolla**, M. Midrio, L. O'Faolain, and T. Krauss, 'Ultra-short InP-based polarisation rotator', *PECS-VI International Symposium on Photonics and Electromagnetic Crystal Structures*, 2005, [website](#)

M. Kotlyar, **L. Bolla**, M. Midrio, L. O'Faolain, and T. Krauss, 'Photonic Crystals for Polarisation Diversity Circuits', *Frontier in Optics (the 89th OSA Annual Meeting)*, Tucson (Arizona), 2005, [website](#)

M. Kotlyar, **L. Bolla**, M. Midrio, L. O'Faolain, and T. Krauss, 'Compact polarization converter in InP-based material', *Opt. Express 13, 5040-5045*, 2005, [abstract](#)

L. Bolla, 'Polarization Rotators', *Technical Report, FUNFOX Project*, Lausanne, Switzerland, 2005, [website](#)

L. Bolla, M. Midrio, and C. G. Someda, 'Energy flow in negative index materials', *Chin. Opt. Lett. 2, 428-430*, 2004, [abstract](#)

L. Bolla, and T. Felici, 'New discretisation scheme for frequency domain electromagnetics', *PIERS 2004 Proceedings*, Pisa, Italy, 2004, [website](#)

L. Bolla, 'Planar Generalized Yee Algorithm', *Technical Report, PICCO Project*, Padua, Italy, 2002, [website](#)

Patents
Author or Co-author of [10 international patents](#) in the field of integrated optics.

Citations
[List of citations from Google Scholar](#).