

# LORENZO BOLLA

SENIOR SOFTWARE ARCHITECT  
RAID RESEARCH SERVICES LLP

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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.

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

Interested in other programming languages, like Haskell and Lisp.

Familiar with UNIX-like (mainly Linux) and Windows OS's.

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 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](#).

### Other Projects

[Github](#)

[StackOverflow](#)

[LinkedIn](#)

## Technical

Python

Javascript

Linux

Haskell

jQuery

git

C/C++

HTML/CSS

vim

## Experience

### [RAID Research Services LLP](#)

Senior Software Architect

May 2012 - now

Design and implement scalable analysis software for finance using mainly *Python* and *Pandas*.

### [Artirix Ltd](#)

Senior Software Engineer

April 2012 - May 2012

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

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## Zugo Ltd

April 2011 - April 2012

### Senior Python Developer

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*).

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## Geneity Ltd

August 2008 - April 2011

### Software Engineer

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).

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## Pirelli & C SpA

June 2005 - August 2008

### Optical Designer

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.

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## TELE System Electronic Srl

March 2005 - June 2005

### Software Engineer

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*.

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## Photon Design Ltd

April 2003 - April 2004

### Software Engineer

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.

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## Progetto Mantegna

May 2001 - April 2003

### Technical Support

Technical assistance in the virtual reconstruction of Mantegna's paintings in the Ovetari's

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## Education

University of Udine - Italy  
PhD

November 2002 - November 2005

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

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European Project  
FUNFOX (Project No. 004582)

September 2004 - June 2005

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

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European Project  
PICCO (IST-1999-10361)

November 2002 - April 2003

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

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University of Padova - Italy  
Laurea in Telecommunication Engineer

September 1996 - March 2002

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## Publications

### Books

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

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### 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](#)

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## Patents

Author or Co-author of 8 [international patents](#) in the field of integrated optics

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