Antonio Cuni

Curriculum Vitae

Last updated: November 1, 2017

Personal Information

Name	Antonio Cuni
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Summary

Introduction I have been designing and implementing software systems since 1994, first as a hobby, then as a study subject and as a job. I care about building solid and extensible designs, and about writing good and readable code. Being a developer, I like to write tools targeted to myself and to the others developers, to make our life easier.

Technologies I am a primary a Python expert, but I have a strong experience also with other technologies, including (but not limited to) Linux, C, C++, SQL and database design, Web development in general, Java, .NET and C#, computer networking and security. Moreover, since programming and computers in general are still a pleasant hobby I like to learn about new technologies, and I can usually do it very quickly.

PyPy and FLOSS I have been a core contributor to various aspects of PyPy since 2006, including the development of the CLI/.NET and JVM backends, the CLI JIT backend, the PyPy JIT compiler generator, the PyPy Python interpreter and the testing infrastructure. Currently, I am interested in optimizing the *cpyext* module, with the final goal of making the whole Python scientific ecosystem very fast on PyPY. In the recent past, I leaded the migration of the PyPy repository from Subversion to Mercurial. Other than PyPy, I started and have contributed to several FLOSS projects, as detailed below.

Methodologies I am addicted to TDD, and I don't even consider jobs or positions for which tests are not important. I care *a lot* about designing beautiful and Pythonic APIs. Thanks to my experience with PyPy, I have a strong and positive experience w.r.t. distributed, agile, sprint-driven and test-driven development, including good communication skills through IRC and emails, the ability to work from home and to be self-motivated to accomplish my goals.

Spoken languages

Italian Native speaker

English Fluent *Cambridge FIRST Certificate in English*

Education

2007 – 2010 **Ph.D. in Computer Science**, *DISI*, Università degli Studi di Genova, Italy.
Dottorato di Ricerca in Informatica
DISSERATION
Title *High performance implementation of Python for CLI/.NET with JIT compiler generator for dynamic languages.*
Advisor Professor Davide Ancona

2004 – 2006 **Master in Computer Science**, *DISI*, Università degli Studi di Genova, Italy.
Laurea Specialistica in Informatica
Grade 110 out of 110 *cum laude*
MASTER THESIS
Title *Implementing Python on .NET*
Advisor Professor Massimo Ancona

2001 – 2004 **Bachelor in Computer Science**, *DISI*, Università degli Studi di Genova, Italy.
Laurea in Informatica
Grade 110 out of 110 *cum laude*

1996 – 2001 **High School Diploma**, *Liceo Scientifico L. Lanfranconi*, Voltri, Italy.
Grade 100 out of 100

Employment History

2012 – now **Consultant**, *Gambit Research.*
My primary task in Gambit is to take their existing system and make it fast(er). I cured the switch from CPython to PyPy: after optimizing the code specifically for PyPy, I got speedups in the order of 10-20x. To speed up the time spent in inter-process communication, I developed *capnpy*, which is a (de)serialization library for Cap'n Proto whose speed ranges from "very fast" on CPython to "embarassingly fast" on PyPy. Moreover, I also helped to generally improve test coverage of some projects.

2001 – now **Freelance software developer and architect**, *My own consultancy.*
During the years, I have designed and implemented numerous software systems of various sizes and complexity, involving several different technologies, including (but not limited to): Linux, Python, C, PostgreSQL, .NET, C#, SQL Server. I also gave consultancies and taught courses about Software Design, Advanced Python usage and Test Driven Development

Feb. 2011 – Sep. 2011 **Researcher/developer**, *Open End AB*, Göteborg.
This position involved both scientific research and core development in the PyPy project, including but not limited to the Just In Time (JIT) Compiler generator and the testing infrastructure.

2010 – 2011 **Researcher**, *Heinrich-Heine-Universität*, Düsseldorf.
This position involved scientific research in the context of the PyPy project, in particular for the development of the Just In Time (JIT) Compiler generator.

2007 – 2010 **Ph.D Student**, *DISI*, Università degli Studi di Genova.
My Ph.D research was about the effective implementation of dynamic languages for statically typed, object oriented virtual machine. In particular, I implemented the PyPy CLI JIT backend for the .NET virtual machine.

2006 – 2007 **Researcher**, *Heinrich-Heine-Universität*, Düsseldorf.
This position involved scientific research in the context of the PyPy project, in particular for bringing it towards maturity.

FLOSS activity

PyPy — Most of my FLOSS contributions are in the context of the PyPy project which I have been a core contributor to since 2006. PyPy is both an implementation of Python in Python and a framework for developing dynamic languages, featuring among the others a JIT compiler generator. `http://pypy.org/`

PyPy ecosystem — I also contributes to many projects which are strongly related to PyPy and/or have been started by the PyPy team. The two most notable ones are `CFFI` and `vmprof`, which was started by me.

Projects started/owned by me

pdb++ — drop-in replacement and an extension of the standard `pdb` command line debugger found in the Python Standard Library. It offers several additional features, including syntax highlighting, full screen debugging, and a better user interface. Despite being a relatively simple project, `pdb++` had an extremely good impact on the development experience of me and of the other PyPy developers that started using it.

`https://github.com/antocuni/pdb/`

fancycompleter — Colorful and sane TAB completion of Python expressions for both the interactive interpreter and the `pdb++` command prompt.

`http://bitbucket.org/antocuni/fancycompleter/`

capnpy — Cap'n Proto serialization for Python. Heavily optimized for both CPython and PyPy.

`https://github.com/antocuni/capnpy`

wmctrl — Python module to programmatically control windows inside X

`http://bitbucket.org/antocuni/wmctrl/`

vcsdeploy — Easily deploy updates of your application to your customers through your favorite Version Control System.

`http://bitbucket.org/antocuni/vcsdeploy`

gcalendarlet — A desklet to show Google Calendar events (for `adesklets`).

`http://codespeak.net/svn/user/antocuni/gcalendarlet/`

ln.vfat — Tool to create simulated hard links in a FAT32 filesystem.

`http://codespeak.net/svn/user/antocuni/ln.vfat/`

motion — Motion detection tool.

`http://codespeak.net/svn/user/antocuni/motion/`

Projects I contributed to

The following is a (partial and incomplete) list of FLOSS projects I have contributed to (e.g., by sending patches and implementing new features):

py.test — `http://pytest.org/`

pyrepl — `http://codespeak.net/pyrepl/`

virtualenv — `http://pypi.python.org/pypi/virtualenv/`

camelot — `http://www.python-camelot.com/`

Publications

Davide Ancona, Massimo Ancona, Antonio Cuni, and Nicholas D. Matsakis. RPython: a step towards reconciling dynamically and statically typed OO languages. In *Proceedings of the 2007 Symposium on Dynamic Languages*, pages 53–64, Montreal, Quebec, Canada, 2007. ACM.

Davide Ancona, Carl Friedrich Bolz, Antonio Cuni, and Armin Rigo. Automatic generation of JIT compilers for dynamic languages in .NET. Technical report, DISI, University of Genova and Institut für Informatik, Heinrich-Heine-Universität Düsseldorf, 2008.

Carl Friedrich Bolz, Antonio Cuni, Maciej Fijałkowski, Michael Leuschel, and Samuele Pedroni Armin Rigo. Allocation removal by partial evaluation in a tracing jit. Submitted to *PEPM'11*, 2011.

Carl Friedrich Bolz, Antonio Cuni, Maciej Fijałkowski, and Armin Rigo. Tracing the meta-level: PyPy's tracing JIT compiler. In *Proceedings of the 4th workshop on the Implementation, Compilation, Optimization of Object-Oriented Languages and Programming Systems*, pages 18–25, Genova, Italy, 2009. ACM.

Antonio Cuni. *High performance implementation of Python for CLI/.NET with JIT compiler generation for dynamic languages*. Ph.d. thesis, DISI, Universitá di Genova, 2010. Technical Report DISI-TH-2010-05.

Antonio Cuni, Davide Ancona, and Armin Rigo. Faster than c#: efficient implementation of dynamic languages on .net. In *Proceedings of the 4th workshop on the Implementation, Compilation, Optimization of Object-Oriented Languages and Programming Systems*, ICOOOLPS '09, pages 26–33, New York, NY, USA, 2009. ACM.

Presentations and talks at international conferences

PyCon ZA '17, Cape Town	Antonio Cuni: *The practice of TDD: tips&tricks*
EuroPython '17, Rimini	Antonio Cuni: *The joy of PyPy JIT: Abstractions for Free*
PyCon Italia '17, Firenze	Antonio Cuni: *PyPy Status Update*
EuroPython '15, Bilbao	Antonio Cuni: *Python and PyPy performance (not) for dummies*
PyCon Italia '15, Firenze	Antonio Cuni: *PyPy JIT (not) for dummies*
EuroPython '13, Firenze	Antonio Cuni: *Bug Hunting for Dummies*
PyCon UK '12, Coventry	Antonio Cuni: *PyPy JIT under the hood*
EuroPython '12, Firenze	Antonio Cuni: *PyPy JIT under the hood*
EuroPython '12, Firenze	Antonio Cuni: *Python White Magic*

EuroPython '12, Firenze	Antonio Cuni, Armin Rigo: *PyPy: current status and the GIL-less future*
EuroPython '11, Firenze	Antonio Cuni, Armin Rigo: *PyPy in production.*
EuroPython '11, Firenze	Antonio Cuni, Armin Rigo: *PyPy hands-on.*
EuroPython '10, Birmingham	Amaury Forgeot d'Arc, Antonio Cuni, Armin Rigo: *PyPy 1.3: Status and News.*
Pycon Italia '10, Firenze	Antonio Cuni, Armin Rigo: *PyPy 1.2: snakes never crawled so fast.* Keynote talk.
EuroPython '09, Birmingham	Antonio Cuni, Samuele Pedroni: *PyPy Status Talk.*
EuroPython '09, Birmingham	Antonio Cuni, Samuele Pedroni: *PyPy: becoming fast.*
ICOOOLPS '09, Genova	Antonio Cuni: *Faster than C#: efficient implementation of dynamic languages on .NET.*
Pycon Italia '09, Firenze	Antonio Cuni: *PyPy's Python Interpreter status.*
Pycon UK '08, Birmingham	Antonio Cuni, Maciej Fijalkowski: *PyPy and The Art of Generating Virtual Machines.*
Pycon Italia '08, Firenze	Antonio Cuni: *PyPy and The Art of Generating Virtual Machines.*
DLS '07, Montreal	Antonio Cuni: *RPython: a Step Towards Reconciling Dynamically and Statically Typed Object Oriented Languages.*
EuroPython '07, Vilnius	Antonio Cuni, Maciej Fijalkowski: *RPython: Need for speed (C and C# considered harmful).*
Pycon Italia '07	Antonio Cuni: *PyPy 1.0 and beyond.*