Giuseppe Ottaviano

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Work experience

10/2014–current **Research Scientist**, *Facebook*, Menlo Park.
Working on Search.

09/2013–09/2014 **Research Fellow**, *ISTI-CNR*, Pisa.
Worked on compressed data structures for Information Retrieval.

11/2012–07/2013 **Research Fellow**, *Università di Pisa*, Pisa.
Worked on compressed data structures for Information Retrieval.
This fellowship ("assegno di ricerca") was co-supported by the Tuscany region, Tiscali, and ISTI-CNR.

01/2012–07/2012 **Research Intern**, *Microsoft Research*, Cambridge.
Worked on computer vision, video compression, image classification and indexing.

11/2010–11/2011 **Research Intern**, *Microsoft Research*, Cambridge.
Worked on compressed data structures for storage of realtime data and integration of social network data in recommendation engines.

02/2010–09/2010 **Software Development Engineer**, *Bing - Microsoft STC*, London.
Worked on approximate string search and machine learning for ranking. Developed the pipeline for Autosuggest for international markets, including diacritic restoration and online spell correction for international languages. Developed compressed data structures for efficient storage of queries.

02/2006–01/2009 **Software Engineer**, *Ask.com*, Pisa.
Worked on clustering problems, image similarity, distributed systems, core libraries, video search.

2004–current **Tutor for the Italian Olympiads in Informatics**.
Selection and training of the Italian team for the International Olympiads in Informatics (IOI). Team leader for the ITA2 team at IOI 2012.

2003 **IOI Italian team training**.
Selected for the Italian team at the International Olympiads in Informatics. Attended intensive training in algorithms and coding.

Education

01/2009–06/2013 **Ph.D. in Computer Science**, *Università di Pisa*, Pisa.
Graduated with a thesis on *Space-Efficient Data Structures for Collections of Textual Data*, supervised by Prof. Roberto Grossi.

09/2006–09/2008 **Laurea Specialistica (Master's degree) in Mathematics**, *Università di Pisa*.
Graduated with 110/110 *cum laude* with a thesis on *Spectral approximation algorithms for graph cut problems*, supervised by Prof. Roberto Grossi, Prof. Luca Trevisan.

09/2003–09/2006 **Laurea (Bachelor's degree) in Matematics**, *Università di Pisa*.
Graduated with 110/110 *cum laude* with a thesis on *Wavelet regularization methods for image deblurring*, supervised by Prof. Dario A. Bini.

Publications

Roi Blanco, Giuseppe Ottaviano, and Edgar Meij. **Fast and Space-efficient Entity Linking in Queries**. In *Proceedings of the ACM International Conference on Web Search and Data Mining (WSDM)*, February 2015.

Giuseppe Ottaviano, Nicola Tonellotto, and Rossano Venturini. **Optimal Space-Time Tradeoffs for Inverted Indexes**. In *Proceedings of the ACM International Conference on Web Search and Data Mining (WSDM)*, February 2015.

Roberto Grossi and Giuseppe Ottaviano. **Fast Compressed Tries Through Path Decompositions**. *Journal of Experimental Algorithmics*, October 2014.

Giuseppe Ottaviano and Rossano Venturini. **Partitioned Elias-Fano Indexes**. In *Proceedings of the Conference on Research and Development in Information Retrieval (SIGIR)*, July 2014. Best Paper Award.

Djamal Belazzougui, Paolo Boldi, Giuseppe Ottaviano, Rossano Venturini, and Sebastiano Vigna. **Cache-Oblivious Peeling of Random Hypergraphs**. In *Proceedings of the Data Compression Conference (DCC)*, March 2014.

Roberto Grossi and Giuseppe Ottaviano. **Design of Practical Succinct Data Structures for Large Data Collections**. In *Proceedings of the International Symposium on Experimental Algorithms (SEA)*, June 2013. Invited paper.

Giuseppe Ottaviano and Pushmeet Kohli. **Compressible Motion Fields**. In *Proceedings of the Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2013.

Paul Hsu and Giuseppe Ottaviano. **Space-Efficient Data Structures for Top-k Completion**. In *Proceedings of the 22st World Wide Web Conference (WWW)*, May 2013.

Roberto Grossi and Giuseppe Ottaviano. **The Wavelet Trie: Maintaining an Indexed Sequence of Strings in Compressed Space**. In *Proceedings of the Symposium on Principles of Database Systems (PODS)*, May 2012.

Roberto Grossi and Giuseppe Ottaviano. **Fast Compressed Tries through Path Decompositions**. In *Proceedings of the Meeting on Algorithm Engineering and Experiments (ALENEX)*, January 2012.

Giuseppe Ottaviano and Roberto Grossi. **Semi-Indexing Semi-Structured Data in Tiny Space**. In *Proceedings of the 20th ACM Conference on Information and Knowledge Management (CIKM)*, October 2011.

Patents

2008 **Systems and methods for personalizing a newspaper**, *A. Signorini, G. Ottaviano, A. Gulli*, U.S. Patent 20080262998, filed on 17/04/2007 while working at Ask.com.

Awards

2014 **SIGIR 2014 Best Paper Award**.
Awarded for the paper "Partitioned Elias-Fano Indexes" with Rossano Venturini.

2013 **Yahoo! Faculty Research and Engagement Program (FREP)**.
Recipient of a Yahoo! FREP grant with Roberto Grossi.

2012 **SIGMOD/PODS 2012 Travel Award, Scottsdale, US**.

2012 **ALENEX 2012 Travel Award, Kyoto, Japan**.

2011 **CIKM 2011 Travel Grant, Glasgow, UK**.

2006 **Scholarship of INdAM for Laurea Specialistica**.
Scholarship of the Italian Institute of Higher Mathematics for Master's degree. Placed 5th in national ranking.

2003 **Scholarship of INdAM for Laurea**.
Scholarship of the Italian Institute of Higher Mathematics for Bachelor's degree. Placed 10th in national ranking.

2003 **Silver medal at IOI (International Olympiads in Informatics)**.
Placed 55th in world ranking, 1st of the Italian team.

Languages

Italian **Native**

English **Fluent**

Technical skills

OS Advanced Linux and Mac OS X, good Windows

programming	Advanced C++ (including STL and Boost libraries) and Python (including internals of the interpreter) knowledge. Good C#, F#, Javascript and LLVM. Basic Java, x86 assembly, Ruby, Bash, and Haskell knowledge.
architecture	Good knowledge of modern CPU architectures. Good knowledge of distributed systems for batch processing. Basic knowledge of networks.
numeric	Good Python+SciPy. Basic Matlab and Mathematica.
typography	LaTeX.
web design	HTML5 and CSS3, Javascript. Basic Django and Ruby On Rails.
database	PostgreSQL, MySQL, SQLite, CouchDB and MongoDB.

Interests

computer science	Succinct and compressed data structures, data compression, machine learning, nearest point search in high dimensional spaces, coding theory, graph algorithms, image processing, compilers.
programming	Library design, distributed systems, language design, metaprogramming (in particular C++ template metaprogramming), JIT compilers.
mathematics	Geometry, numerical linear algebra, algebraic topology, computational commutative algebra, logic, non-standard analysis, category theory.