



Giulio Ermanno Pibiri

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Florence, Italy

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Date of Birth: 13/07/1990 - Nationality: Italian

Curriculum Vitae et Studiorum

Work experience

- 10/2018 – present **Teaching Assistant for Competitive Programming**, *University of Pisa, Italy*.
<https://github.com/rossanoventurini/CompetitiveProgramming>
- 06/2017 – 12/2017 **Software Developer for the European project Large-scale Indie Gaming Analytics (LIGA)**, *ISTI-CNR, Pisa, Italy*.
Back-end design of a recommender system to suggest 3D models to users of the 3D-KUMO company.
- 09/2017 – 12/2017 **Teaching Assistant for Competitive Programming**, *University of Pisa, Italy*.
<https://github.com/rossanoventurini/CompetitiveProgramming>
- 10/2016 – 12/2016 **Teaching Assistant for Laboratory of Algorithms**, *University of Pisa, Italy*.
<http://didawiki.cli.di.unipi.it/doku.php/informatica/alr/start>
- 02/2016 – 04/2016 **Teaching Assistant for Laboratory of Algorithms**, *University of Pisa, Italy*.
<http://didawiki.cli.di.unipi.it/doku.php/informatica/all-a/start>
- 04/2015 – 07/2015 **Software Engineering Intern at IBM**, *Rome, Italy*.
Re-design of the IBM Customer Partnership Portal with state-of-the-art tools, including MongoDB, NodeJS, ExpressJS, jQuery and Bootstrap. Proposed goal: an efficient portal implementation with a stunning and easy-to-use user interface.

Education

- 05/2018 - 10/2018 **Visiting PhD student at School of Computing and Information Systems**, *Melbourne, Australia*.
<https://cis.unimelb.edu.au/>
- 04/2018 - 05/2018 **Visiting PhD student at RIKEN AIP**, *Tokyo, Japan*.
<http://www.riken.jp/en/research/labs/aip/>
- 11/2015 - present **PhD student in Computer Science**, *University of Pisa, Department of Computer Science, Pisa, Italy*.
 - Research Area: Algorithms & Data Structures
 - Supervisor: Rossano Venturini (<http://pages.di.unipi.it/rossano/>)
 - Thesis: *Space and Time-Efficient Data Structures for Massive Datasets*
- 2012–2014 **Master Degree in Computer Science & Networking**, *University of Pisa and Scuola Superiore Sant'Anna di studi universitari e perfezionamento, Pisa, Italy*.
110/110 Summa Cum Laude, 06/03/2015
 - Master Thesis *Dynamic Elias-Fano Encoding*
 - Supervisor Rossano Venturini
 - Description My Master Thesis focuses on the design and implementation of space-efficient data structures that make use of the *Elias-Fano integer encoding*.
- 2009–2012 **Bachelor Degree in Computer Engineering**, *University of Florence, Florence, Italy*.
110/110 Summa Cum Laude, 09/10/2012
 - Bachelor Thesis *Quantum Computation & Grover's Algorithm*
 - Supervisor Gabriele Vezzosi (<http://www.dma.unifi.it/~vezzosi/>)

Description	My Bachelor Thesis offers a complete overview of the most important features of Quantum Computing, with a particular emphasis on <i>quantum algorithms</i> such as the one of Grover.
07/2012 – 10/2012	Quantum Mechanics and Quantum Computation on-line course , <i>University of Berkeley</i> , Berkeley, California.
2004–2009	Diploma di Maturità Scientifica , <i>Liceo Scientifico Statale Guido Castelnuovo</i> , Florence, Italy. 100/100

Publications

- 2018 Giulio Ermanno Pibiri, Matthias Petri, Alistair Moffat, **Fast Dictionary-based Compression for Inverted Indexes**. ACM Conference on Web Search and Data Mining (WSDM), pages 9.
- 2018 Giulio Ermanno Pibiri and Rossano Venturini, **Handling Massive N-Gram Datasets Efficiently**. CoRR, <https://arxiv.org/abs/1806.09447>, pages 39.
- 2018 Giulio Ermanno Pibiri and Rossano Venturini, **Variable-Byte Encoding is Now Space-Efficient Too**. CoRR, <https://arxiv.org/abs/1804.10949>, pages 14.
- 2018 Giulio Ermanno Pibiri and Rossano Venturini, **Inverted Index Compression**. Encyclopedia of Big Data Technologies, pages 8.
- 2017 Giulio Ermanno Pibiri and Rossano Venturini, **Efficient Data Structures for Massive N-Gram Datasets**. ACM Conference on Research and Development in Information Retrieval (SIGIR), pages 10.
- 2017 Giulio Ermanno Pibiri and Rossano Venturini, **Dynamic Elias-Fano Representation**. Annual Symposium on Combinatorial Pattern Matching (CPM), pages 14.
- 2017 Giulio Ermanno Pibiri and Rossano Venturini, **Clustered Elias-Fano Indexes**. ACM Transactions on Information Systems (TOIS), volume 2, pages 33.

Code

- DINT** The C++ library used for the experiments in the paper *Fast Dictionary-based Compression for Inverted Indexes*.
- opt_vbyte** The C++ library used for the experiments in the paper *Variable-Byte Encoding is Now Space-efficient Too*.
- tongrams** The C++ library implementing the compressed data structures and algorithms described in the papers *Efficient Data Structures for Massive N-Gram Datasets* and *Handling Massive N-Gram Datasets Efficiently*.
- clustered EF** The C++ library used for the experiments in the paper *Clustered Elias-Fano Indexes*.

Awards and Grants

- 2017 *SIGIR Student Travel Grant* issued by ACM SIGIR.
- 2015 *Master Degree Award: Best Performance a.y. 2013/2014* issued by Scuola Superiore Sant'Anna.
- 2015 *Best Master Thesis Award in Theoretical Computer Science*, issued by the Italian chapter of the EATCS (European Association for Theoretical Computer Science). Invited to the Italian Conference on Theoretical Computer Science (ICTCS), Florence.

Conferences and talks

- 2018 Seminar talk entitled *On Optimally Partitioning Variable-Byte Index Data*. RMIT University, Melbourne, Australia.

- 2018 Seminar talk entitled *Elias-Fano Encoding: a powerful tool for data structure design*. Riken AIP, Tokyo, Japan.
- 2017 SIGIR Conference presentation entitled *Efficient Data Structures for Massive N-Gram Datasets*. Keio Plaza Hotel, Tokyo, Japan.
- 2017 CPM Conference presentation entitled *Dynamic Elias-Fano Representation*. University of Warsaw Library, Warsaw, Poland.
- 2017 IIR Conference presentation entitled *Efficient Data Structures for Massive N-Gram Datasets*. Università della Svizzera Italiana, Lugano, Switzerland.
- 2016 Seminar talk entitled *Elias-Fano Encoding: succinct representation of monotone integer sequences with search operations*. Department of Computer Science, Pisa, Italy.

Miscellanea

- 2018 Member of the Organizing Committee of the 30-th edition of the International Symposium on Combinatorial Pattern Matching (CPM 2019).
- 2018 Member of the Program Committee of the 2-nd edition of the Workshop on Knowledge Graphs and Semantics for Text Retrieval and Analysis (KG4IR), in conjunction with ACM SIGIR 2018.
- 2017 Member of the Organizing Committee of the 24-th edition of the International Symposium on String Processing and Information Retrieval (SPIRE 2017).
- 2016 Student volunteer for the organization of the 39-th edition of the International ACM SIGIR Conference on Research and Development in Information Retrieval, (SIGIR 2016).

Computer skills

OS	Mac OS X, Linux.
Programming	C++ (advanced), C; Java, Python.
Architecture	Knowledge of modern CPUs architecture.
Typography	L ^A T _E X, Pages.
Database	MySQL, MongoDB.

Languages

Italian	Native	<i>CEFR level: C2</i>
English	Fluent	<i>CEFR level: C1</i>
2018	TOEFL iBT , 100, (HIGH level).	
2008	First Certificate in English, Council of Europe Level B2, Cambridge ESOL Level 1 Certificate in ESOL International , <i>University of Cambridge</i> , Cambridge, United Kingdom.	

Driving Licences

01/10/2010	Driving License of type B
23/01/2010	Driving License of type A

Web Sites

Personal	http://pages.di.unipi.it/pibiri
Github	https://github.com/jermp
LinkedIn	https://it.linkedin.com/pub/giulio-ermanno-pibiri/ab/ab3/496

Interests

Computer Science	Efficient algorithms and data-structures for storage and fast retrieval of large integer/string data sets. Succinct and compressed data-structures.
Personal	Painting miniatures, doing sport, music and movies.