Giulio Ermanno **Pibiri**

✉ *giulio.pibiri@di.unipi.it*

Curriculum Vitae et Studiorum

Work experience

02/2019 – present **Teaching Assistant for Laboratory of Algorithms**, *University of Pisa, Italy*.
`http://didawiki.cli.di.unipi.it/doku.php/informatica/all-a/start`

10/2018 – 12/2018 **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

11/2018 - present **Postdoctoral researcher in Computer Science**, *Institute of Science and Information Technologies "A. Faedo", National Research Council (ISTI-CNR)*, Pisa, Italy.
Research Area: Efficiency, Indexing, Algorithm Engineering, Data Compression

11/2015 - 10/2018 **PhD in Computer Science**, *University of Pisa, Department of Computer Science*, Pisa, Italy.
- Research Area: Efficiency, Indexing, Algorithm Engineering, Data Compression
- Supervisor: Rossano Venturini (`http://pages.di.unipi.it/rossano`)
- Thesis: *Space and Time-Efficient Data Structures for Massive Datasets*. Defended on 08/03/2019.

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/`

2012–2014	**Master Degree in Computer Science & Networking**, *University of Pisa and Scuola Superiore Sant'Anna di studi universitari e perfezionamento*, Pisa, Italy.

- Supervisor: Rossano Venturini (`http://pages.di.unipi.it/rossano`)
- Thesis: *Dynamic Elias-Fano Encoding*. Defended on 06/03/2015; **110/110 *Summa Cum Laude***.

2009–2012	**Bachelor Degree in Computer Engineering**, *University of Florence*, Florence, Italy.

- Supervisor: Gabriele Vezzosi (`http://www.dma.unifi.it/~vezzosi`)
- Thesis: *Quantum Computation & Grover's Algorithm*. Defended on 09/10/2012; **110/110 *Summa Cum Laude***.

07/2012 – 10/2012	**Quantum Mechanics and Quantum Computation on-line course**, *University of Berkeley*, Berkeley, California.
2004–2009	**Diploma di Maturità Scientifica**, *Liceo Scientifico Statale Guido Castelnuovo*, Florence, Italy. **100/100**

Publications

2019	Raffaele Perego, Giulio Ermanno Pibiri and Rossano Venturini, **Compressed Indexes for Fast Search of Semantic Data**. CoRR, `https://arxiv.org/abs/1904.07619`, pages 19.
2019	Giulio Ermanno Pibiri and Rossano Venturini, **On Optimally Partitioning Variable-Byte Codes**. IEEE Transactions on Knowledge and Data Engineering (TKDE), pages 12.
2019	Giulio Ermanno Pibiri and Rossano Venturini, **Handling Massive N-Gram Datasets Efficiently**. ACM Transactions on Information Systems (TOIS), pages 41.
2019	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, **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

rdf_indexes	The C++ library used for the experiments in the paper *Compressed Indexes for Fast Search of Semantic Data*.

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 *On Optimally Partitioning Variable-Byte Codes*.
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

2019	WSDM Conference presentation entitled *Fast Dictionary-based Compression for Inverted Indexes*. Melbourne Exhibition Center, Melbourne, Australia.
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 Library of Warsaw, Warsaw, Poland.
2017	IIR Conference presentation entitled *Efficient Data Structures for Massive N-Gram Datasets*. Università della Szizzera 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

2019	Member of the Program Committee of the 42-nd edition of the International ACM SIGIR Conference on Research and Development in Information Retrieval, (SIGIR 2019).
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 conjuction 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++ and C (advanced); Java, Python.
Architecture	Knowledge of modern CPUs architecture.
Typography	LaTeX, Pages.
Database	MySQL, MongoDB.

Languages

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