

## 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.  
 o Supervisor: Rossano Venturini (<http://pages.di.unipi.it/rossano>)  
 o 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.  
 o Supervisor: Gabriele Vezzosi (<http://www.dma.unifi.it/~vezzosi>)  
 o 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 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.
- 2019 Giulio Ermanno Pibiri and Rossano Venturini, **Handling Massive N-Gram Datasets Efficiently**. ACM Transactions on Information Systems (TOIS), pages 41.
- 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

- 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 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

- 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 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++ and C (advanced); Java, Python.
Architecture	Knowledge of modern CPUs architecture.
Typography	L <sup>A</sup> T <sub>E</sub> X, Pages.
Database	MySQL, MongoDB.

---

## Languages

Italian	<b>Native</b>	<i>CEFR level: C2</i>
English	<b>Fluent</b>	<i>CEFR level: C1</i>
2018	<b>TOEFL iBT</b> , 100, (HIGH level).	
2008	<b>First Certificate in English, Council of Europe Level B2, Cambridge ESOL Level 1 Certificate in ESOL International</b> , <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	<a href="http://pages.di.unipi.it/pibiri">http://pages.di.unipi.it/pibiri</a>
Github	<a href="https://github.com/jermp">https://github.com/jermp</a>
LinkedIn	<a href="https://it.linkedin.com/pub/giulio-ermanno-pibiri/ab/ab3/496">https://it.linkedin.com/pub/giulio-ermanno-pibiri/ab/ab3/496</a>