Giulio Ermanno Pibiri

Curriculum Vitae et Studiorum

Contact Information

National Research Council of Italy (CNR)

Institute of Science and Information Technologies "A. Faedo" (ISTI)

Via G. Moruzzi 1, 56124 Pisa, Italy

Email   giulio.pibiri@di.unipi.it

Email   giulio.ermanno.pibiri@isti.cnr.it

Personal page   http://pages.di.unipi.it/pibiri

Personal Information

Place of birth   Florence, Italy

Date of birth   13 July 1990

Research Interests

Indexing, Efficiency, Data Compression, Algorithm Engineering

Education

2015 – 2018   **PhD in Computer Science**.
- University of Pisa, Pisa, Italy
- Supervisor: Rossano Venturini (`http://pages.di.unipi.it/rossano`)
- Thesis: *Space- and Time-Efficient Data Structures for Massive Datasets*.
  Defended on 08/03/2019.
- Grade: Excellent.

2012 – 2014   **Master Degree in Computer Science & Networking**.
- University of Pisa and Scuola Superiore Sant'Anna, Pisa, Italy
- Supervisor: Rossano Venturini (`http://pages.di.unipi.it/rossano`)
- Thesis: *Dynamic Elias-Fano Encoding*.
  Defended on 06/03/2015.
- Grade: 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.
- Grade: 110/110 *summa cum laude*.

2004 – 2009   **High School Diploma**.
- Liceo Scientifico Statale Guido Castelnuovo, Florence, Italy
- Grade: 100/100.

Professional Employment

11/2018 – present	**Postdoctoral Researcher in Computer Science**. Institute of Science and Information Technologies "A. Faedo" (ISTI), National Research Council of Italy (CNR), Pisa, Italy
11/2015 – 11/2018	**PhD Student in Computer Science**. University of Pisa, Italy
05/2018 – 10/2018	**Visiting PhD Student**. The University of Melbourne, School of Computing and Information Systems, Melbourne, Australia
04/2018 – 05/2018	**Visiting PhD Student**. RIKEN Advanced Intelligence Project (AIP), Tokyo, Japan
02/2016 – present	**Teaching Assistant**. ○ Algorithmics and Laboratory (Bachelor Degree in Computer Science) ○ Competitive Programming and Contests (Master Degree in Computer Science) University of Pisa, Italy
06/2017 – 12/2017	**Software Developer at ISTI-CNR**. European project *Large-scale Indie Gaming Analytics* Pisa, Italy
04/2015 – 07/2015	**Software Engineering Intern at IBM**. Rome, Italy

Awards and Grants

2017	*SIGIR Student Travel Grant* issued by ACM SIGIR.
2015	*PhD Scholarship* issued by the University of Pisa, Department of Computer Science.
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 European Association for Theoretical Computer Science (EATCS).

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.

Software

GitHub page   https://github.com/jermp

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*.

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.

Teaching Experience

02/2019 – present	**Assistant for *Algorithmics and Laboratory*.** Bachelor Degree in Computer Science, University of Pisa, Italy
10/2018 – 12/2018	**Assistant for *Competitive Programming and Contests*.** Master Degree in Computer Science, University of Pisa, Italy
09/2017 – 12/2017	**Assistant for *Competitive Programming and Contests*.** Master Degree in Computer Science, University of Pisa, Italy
10/2016 – 12/2016	**Assistant for *Algorithmics and Laboratory*.** Bachelor Degree in Computer Science, University of Pisa, Italy
02/2016 – 06/2016	**Assistant for *Algorithmics and Laboratory*.** Bachelor Degree in Computer Science, University of Pisa, Italy

Professional Activities

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).

Professional Memberships

2017 – present	Association for Computing Machinery (ACM SIGIR).

Languages

Italian	**Native**	*CEFR level: C2*
English	**Fluent**	*CEFR level: C1*
2018	**TOEFL iBT in English.** 100 (HIGH level)	
2008	**First Certificate in English (Level B2)**. 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

Personal   http://pages.di.unipi.it/pibiri
GitHub   https://github.com/jermp
LinkedIn   https://www.linkedin.com/in/giulio-ermanno-pibiri-496ab3ab/