Nicola Prezza

Scientific CV

Education

Jan 1, 2014 – Dec 31, 2016	**Ph.D, Computer Science, Mathematics, and Physics**, *Department of Computer Science, University of Udine, Via delle Scienze, 206, 33100 Udine, Italy*, Thesis: *Compressed Computation for Text Indexing*, Final grade: passed cum laude.
Sep 26, 2011 – Oct 18, 2013	**Master's degree in Computer Science**, *Department of Computer Science, University of Udine, Via delle Scienze, 206, 33100 Udine, Italy*, Final grade: 110/110 cum laude. GPA: 3.90.
Aug 27, 2012 – Jan 30, 2013	**Erasmus Exchange student**, *University of Southern Denmark, Odense, Denmark*, Subjects: bioinformatics, combinatorial optimization, statistical simulation.
Sep 25, 2008 – Dec 14, 2011	**Bachelor's degree in Computer Science**, *Department of Computer Science, University of Udine, Via delle Scienze, 206, 33100 Udine, Italy*, Final grade: 110/110 cum laude. GPA: 3.73.

Employments

Mar 1, 2018 –	**PostDoc researcher**, *Department of Computer Science, University of Pisa, Italy*, Project: *application of compressed indexes to aligment-free methods in bioinformatics*.
Jan 1, 2017 – Mar 28, 2018	**PostDoc researcher**, *AlgoLoG, DTU Compute, Technical University of Denmark, Denmark*, Project: *Algorithms for the compression of big repetitive data*.
Jan 1, 2014 – Dec 31, 2016	**Ph.D.-student in Computer Science**, *University of Udine, Italy*, Project: *Compressed Computation for Text Indexing*.

Awards

Jun 29, 2018	**PhD award UniUD for best 2017 PhD thesis**, *University of Udine*.
Jun 21, 2018	**EATCS Prize "Best italian young researcher in Theoretical Computer Science 2018"**.
Jun 20, 2016	**Best talk award**, *MatBio 2016, King's college London*, Talk title: *A Randomized In-Place LCE Data Structure*.
Jan 1, 2014	**PhD fellowship**, *Department of Computer Science, University of Udine, Italy*.

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Publications

2018

International Journals

1. Philip Bille, Travis Gagie, Inge Li Gørtz, and Nicola Prezza. **A Separation Between RLSLPs and LZ77**. *Journal of Discrete Algorithms*. 2018.
2. Gonzalo Navarro and Nicola Prezza. **Universal Compressed Text Indexing**. *Theoretical Computer Science*. 2018.

International Conferences

1. Dominik Kempa and Nicola Prezza. **At the Roots of Dictionary Compression: String Attractors**. *Proceedings of the 50th Annual ACM Symposium on the Theory of Computing (STOC)*, June 25-29, 2018 in Los Angeles, CA.
2. Travis Gagie, Gonzalo Navarro, and Nicola Prezza. **Optimal-Time Text Indexing in BWT-runs Bounded Space**. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. Pages 1459-1477.
3. Nicola Prezza. **In-Place Sparse Suffix Sorting**. *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*. Pages 1496-1508.
4. Travis Gagie, Gonzalo Navarro, and Nicola Prezza. **On the Approximation Ratio of Lempel-Ziv Parsing**. *Proceedings of LATIN 2018*.
5. Nicola Prezza, Nadia Pisanti, Marinella Sciortino, and Giovanna Rosone. **Detecting Mutations by eBWT**. *Proceedings of WABI 2018*.
6. Dominik Kempa, Alberto Policriti, Nicola Prezza, and Eva Rotenberg. **String Attractors: Verification and Optimization**. *Proceedings of ESA 2018*.
7. Nicola Prezza. **On String Attractors**. Short communication. In *ICTCS*, pp. 12-16. `http://ceur-ws.org/Vol-2243/`. 2018.

2017

PhD thesis

1. Nicola Prezza. **Compressed Computation for Text Indexing**. *PhD thesis. University of Udine, 2017*.

International Journals

1. Karin Engström, Tomasz K. Wojdacz, Francesco Marabita, Philip Ewels, Max Käller, Francesco Vezzi, Nicola Prezza, Joel Gruselius, Marie Vahter, and Karin Broberg. **Transcriptomics and methylomics of CD4-positive T cells in arsenic-exposed women**. *Archives of toxicology 91, no. 5 (2017): 2067-2078*.
2. Alberto Policriti and Nicola Prezza. **LZ77 computation based on the run-length encoded BWT**. *Algorithmica* (2017): 1-26.

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International Conferences

1. Philip Bille, Inge Li Gørtz, and Nicola Prezza. **Space-Efficient Re-Pair Compression**. Proceedings of *Data Compression Conference (DCC)*, 2017. IEEE, 2017.

2. Nicola Prezza. **A Framework of Dynamic Data Structures for String Processing**. Proceedings of the *16th International Symposium on Experimental Algorithms (SEA)*, 2017.

3. Djamal Belazzougui, Fabio Cunial, Travis Gagie, Nicola Prezza, and Mathieu Raffinot. **Flexible indexing of repetitive collections**. In *Conference on Computability in Europe (CiE)*, pp. 162-174. Springer, Cham, 2017.

4. Philip Bille, Anders Roy Christiansen, Nicola Prezza, and Frederik Rye Skjoldjensen. **Succinct Partial Sums and Fenwick Trees**. In *International Symposium on String Processing and Information Retrieval (SPIRE)*, pp. 91-96. Springer, Cham, 2017.

5. Alberto Policriti and Nicola Prezza. **From LZ77 to the Run-Length Encoded Burrows-Wheeler Transform, and Back**. In *proceedings of the 28th Annual Symposium on Combinatorial Pattern Matching (CPM)*, 2017.

2016

International Journals

1. Nicola Prezza, Francesco Vezzi, Max Käller, and Alberto Policriti. **Fast, accurate, and lightweight analysis of BS-treated reads with ERNE 2**. *BMC bioinformatics* 17, no. 4 (2016): 69.

International Conferences

1. Alberto Policriti and Nicola Prezza. **Computing LZ77 in run-compressed space**. In *Data Compression Conference (DCC)*, 2016, pp. 23-32. IEEE, 2016.

2015

International Journals

1. Alberto Policriti and Nicola Prezza. **Fast randomized approximate string matching with succinct hash data structures**. *BMC bioinformatics* 16, no. 9 (2015): S4.

International Conferences

1. Djamal Belazzougui, Fabio Cunial, Travis Gagie, Nicola Prezza, and Mathieu Raffinot. **Composite repetition-aware data structures**. In *Annual Symposium on Combinatorial Pattern Matching (CPM)*, pp. 26-39. Springer, Cham, 2015.

2. Alberto Policriti and Nicola Prezza. **Fast online lempel-ziv factorization in compressed space**. In *International Symposium on String Processing and Information Retrieval (SPIRE)*, pp. 13-20. Springer, Cham, 2015.

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3. Alberto Policriti, Nicola Gigante, and Nicola Prezza. **Average linear time and compressed space construction of the Burrows-Wheeler transform**. In *International Conference on Language and Automata Theory and Applications (LATA)*, pp. 587-598. Springer, Cham, 2015.

2014

International Conferences

1. Alberto Policriti and Nicola Prezza. **Hashing and indexing: Succinct data structures and smoothed analysis**. In *International Symposium on Algorithms and Computation (ISAAC)*, pp. 157-168. Springer, Cham, 2014.

2012

International Conferences

1. Nicola Prezza, Cristian Del Fabbro, Francesco Vezzi, Emanuale De Paoli, and Alberto Policriti. **ERNE-BS5: aligning BS-treated sequences by multiple hits on a 5-letters alphabet**. In *Proceedings of the ACM conference on bioinformatics, computational biology and biomedicine (ACM-BCB)*, pp. 12-19. ACM, 2012.

Teaching

Fall 2018	**Fondamenti di Programmazione e Laboratorio**, *University of Pisa* `http://pages.di.unipi.it/bodei/CORSO_FP_18/FP/index.html`, 6 ECTS.
Jul 30, 2018 – Aug 18, 2018	**Compact data structures (Ph.D course)**, *University of Coruña.* `https://www.udc.es/gl/iss/courses/courses_2018/Compact_data_structures/index.html`, 6 ECTS.
Sep 15, 2017 – Dec 8, 2017	**Compact data structures (Ph.D course)**, *Technical University of Denmark, Kgs. Lyngby, Denmark.* `www2.compute.dtu.dk/courses/02951`, 5 ECTS.

Academic Activities

Program Committees

I am on the PC of the 29th Annual Symposium on Combinatorial Pattern Matching (CPM 2018) and I will co-chair the 13th Workshop on Compression, Text and Algorithms (WCTA 2018)

Review activities

I reviewed more than 40 publications for international conferences and journals. Conferences include: CPM, SPIRE, LATA, DCC, SEA. Journals include: Algorithmica, Information Systems, Theoretical Computer Science, Journal of Discrete Algorithms, Algorithms for Molecular Biology

Talks at International Conferences

1. *At the Roots of Dictionary Compression: String Attractors*. 50th Annual ACM Symposium on the Theory of Computing (STOC 2018), June 27, 2018, Los Angeles.

2. *In-Place Sparse Suffix Sorting*. Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), January 7-10, 2018, New Orleans.

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3. *Optimal-time text indexing in BWT-runs bounded space*. Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA), January 7-10, 2018, New Orleans.

4. *Succinct Partial Sums and Fenwick Trees*. String Processing and Information Retrieval (SPIRE), September 26-29, 2017, Palermo.

5. *From LZ77 to the Run-Length Burrows-Wheeler Transform, and Back*. Symposium on Combinatorial Pattern Matching (CPM), July 4-6, 2017, Warsaw.

6. *A Framework of Dynamic Data Structures for String Processing*. Symposium on Experimental Algorithms (SEA), June 21-23, 2017, King's College London.

7. *Space-Efficient Re-Pair Compression*. Data Compression Conference (DCC), March 26-29, 2017, Snowbird (UT).

8. *A Randomized LCE Data Structure* (best student talk award). Mathematical foundations for bioinformatics (MatBio), July 20, 2016, King's College London.

9. *Computing LZ77 in Run-Compressed Space* . Data Compression Conference (DCC), March 29 - April 1, 2016, Snowbird (UT).

10. *Fast Online Lempel-Ziv Factorization in Compressed Space*. String Processing and Information Retrieval (SPIRE), September 3, 2015, King's college London.

11. *Average linear time and compressed space construction of the Burrows-Wheeler transform*. 9th International Conference on Language and Automata Theory and Applications (LATA), March 2-6, 2015, Nice, France.

12. *Hashing and Indexing: succinct data structures and smoothed analysis*. Symposium on Algorithms and Computation (ISAAC), December 15-17, 2014, Jeonju, Korea.

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