

Leonardo Pellegrina

Postdoctoral Researcher

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EDUCATION

- Ph.D.** in Information Engineering, University of Padova 2017–2021 (XXXIII cycle)
Thesis: *Rigorous and Efficient Algorithms for Significant and Approximate Pattern Mining*.
Advisor: Prof. Fabio Vandin.
- M.S.** in Computer Engineering, University of Padova, *summa cum laude* 2017
Thesis: *Efficient Incremental Mining of Significant Patterns*. Advisor: Prof. Fabio Vandin.
- B.S.** in Information Engineering, University of Padova 2015
Thesis: *Network Performance Evaluation of Fat-Tree and B-Cube Topologies*. Advisor: Prof. Leonardo Badia.

ACADEMIC APPOINTMENTS

- Postdoctoral Researcher** (“Junior type B” grant), Department of Information Engineering,
University of Padova Dec. 2020-Dec. 2022
- Visiting Research Fellow**, Department of Computer Science, Brown University,
advised by Prof. Eli Upfal. Jan. 2019-June 2019
- Teaching Assistant**, *Machine Learning*, Department of Information Engineering,
University of Padova 2017-2021
- Teaching Assistant**, *Big Data Computing*, Department of Information Engineering,
University of Padova 2017-2019
- Teaching Assistant**, *Foundations of Computer Science*, Department of Information Engineering,
University of Padova 2019-2020

PUBLICATIONS

Preprints

Sharper convergence bounds of Monte Carlo Rademacher Averages through Self-Bounding functions, **Leonardo Pellegrina**, arXiv (2020). <https://arxiv.org/abs/2010.12103>.

Conference Proceedings (* denotes equal contribution)

SPRISS: Approximating Frequent k -mers by Sampling Reads, and Applications, Diego Santoro*, **Leonardo Pellegrina***, and Fabio Vandin, Accepted for presentation at the 25th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2021). <https://arxiv.org/abs/2101.07117>.

MCRapper: Monte-Carlo Rademacher Averages for Poset Families and Approximate Pattern Mining, **Leonardo Pellegrina**, Cyrus Cousins, Fabio Vandin and Matteo Riondato, Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2020). <https://doi.org/10.1145/3394486.3403267>.

SPuManTE: Significant Pattern Mining with Unconditional Testing, **Leonardo Pellegrina**, Matteo Riondato and Fabio Vandin, Proceedings of the 25th ACM SIGKDD International

Conference on Knowledge Discovery & Data Mining (KDD 2019).
<https://dl.acm.org/doi/abs/10.1145/3292500.3330978>.

Fast Approximation of Frequent k -mers and Applications to Metagenomics, **Leonardo Pellegrina**, Cinzia Pizzi and Fabio Vandin, Proceedings of the 23th Annual International Conference on Research in Computational Molecular Biology (RECOMB 2019).
https://link.springer.com/chapter/10.1007/978-3-030-17083-7_13.

Efficient Mining of the Most Significant Patterns with Permutation Testing, **Leonardo Pellegrina** and Fabio Vandin, Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2018). <https://doi.org/10.1145/3219819.3219997>.

An innovative space tether deployer with retrieval capability: Design and test of STAR experiment, Gilberto Grassi, Alessia Gloder, **Leonardo Pellegrina**, Mattia Pezzato, Alvise Rossi, Francesco Branz, Matteo Duzzi, Riccardo Mantellato, Lorenzo Olivieri, Francesco Sansone, Enrico C. Lorenzini, Alessandro Francesconi, Proceedings of the 68th International Astronautical Congress (IAC 2017).

Design and test in microgravity of a space tether length and length rate measurement device, Gilberto Grassi, Mattia Pezzato, Alessia Gloder, Riccardo Mantellato, Alessandro Francesconi, Enrico Lorenzini, Alvise Rossi and **Leonardo Pellegrina**, IEEE International Workshop on Metrology for AeroSpace (MetroAeroSpace 2017).

Towards open-source shared implementations of keyword-based access systems to relational data, Alex Badan, Luca Benvegnú, Matteo Basetton, Giovanni Bonato, Alessandro Brighente, Alberto Cenzato, Piergiorgio Ceron, Giovanni Cogato, Stefano Marchesin, Alberto Minetto, **Leonardo Pellegrina**, Alberto Purpura, Riccardo Simionato, Nicolò Soletti, Matteo Tessarotto, Andrea Tonon, Federico Vendramin, Nicola Ferro, Workshop Proceedings of the joint 20th International Conferences on Extending Database Technology and Database Theory (EDBT/ICDT 2017).

Keyword-based access to relational data: To reproduce, or to not reproduce?, Alex Badan, Luca Benvegnú, Matteo Basetton, Giovanni Bonato, Alessandro Brighente, Stefano Marchesin, Alberto Minetto, **Leonardo Pellegrina**, Alberto Purpura, Riccardo Simionato, Matteo Tessarotto, Andrea Tonon, Nicola Ferro, Proceedings of the Symposium on Advanced Database Systems (SEBD 2017).

Journals

Efficient Mining of the Most Significant Patterns with Permutation Testing, **Leonardo Pellegrina** and Fabio Vandin, Data Mining & Knowledge Discovery 34, 1201–1234 (2020).
<https://doi.org/10.1007/s10618-020-00687-8>.

Fast Approximation of Frequent k -mers and Applications to Metagenomics, **Leonardo Pellegrina**, Cinzia Pizzi and Fabio Vandin, Journal of Computational Biology *Special Issue of Best Papers from the RECOMB 2019 conference*, 27, 4, 534–549 (2020).
<https://doi.org/10.1089/cmb.2019.0314>.

Patents

Patent no. 102017000039763 for the industrial invention *Automatic Device for the Controlled Deployment and Retrieval of a Tethered Probe in Space*, c/o Italian Office for Patents and Trademarks (2018).

INVITED TALKS

SPuManTE: Significant Pattern Mining with Unconditional Testing, Workshop on Computation and Statistics in Data science (CaStleD), Bertinoro, Italy. 4/10/2019

Efficient Mining of the Most Significant Patterns with Permutation Testing, Kick off meeting of the PRIN project AHeAd, Luiss University, Rome, Italy. 23/09/2019

Rigorous Mining of the Most Significant Patterns, Workshop on Foundations of Learning from Data (FouLarD), Bertinoro, Italy. 10/09/2018

FELLOWSHIPS AND AWARDS

ISCB RECOMB 2019 Travel Fellowship.	02/2019
“Ing. Aldo Gini” Foundation Fellowship, Padova, Italy.	11/2018
“Luciano Iglesias” Foundation Fellowship, Padova, Italy.	05/2018
“Cariparo” Foundation Ph.D. Fellowship, Padova, Italy.	2017-2020

SCIENTIFIC ACTIVITIES

Tutorials:

Multiple Hypothesis Testing and Statistically-sound Pattern Mining, **Leonardo Pellegrina**, Matteo Riondato, Fabio Vandin, Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD 2019).
<https://doi.org/10.1145/3292500.3332286>.

Program Committees: RECOMB-SEQ (2021).

Conference Reviewing: WABI (2018), RECOMB (2019, 2020), KDD (2019, 2020, 2021), ECML-PKDD (2019, 2020, 2021), CIKM (2019), ICDM (2019, 2020), WSDM (2020), AAAI (2020), ISMB (2020), TheWebConf (2021).

Journal Reviewing: JGAA (2020).