

Ilie Sarpe

Curriculum Vitae

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📁 iliesarpe.github.io

Last update: Mar 2023

ABOUT ME

I got my PhD in Computer Engineering under the supervision of Prof. Fabio Vandin. My research interests largely focus on the development of algorithms for the analysis of massive temporal networks. In particular I am currently developing data mining algorithms for collecting patterns (e.g., motifs) from large temporal networks, such algorithms need to be scalable and efficient since extracting such patterns is computationally demanding on large temporal networks with currently available techniques. I am thus focused especially on sampling-based algorithms with provable theoretical guarantees.

EDUCATION

PhD Student

Oct 2019 - Mar 2023

UNIVERSITY OF PADOVA, ITALY
Department of Information Engineering

THESIS TITLE: Efficient and Rigorous Algorithms for the Analysis of Large Temporal Networks

ADVISOR: Prof. Fabio Vandin

M.S. in Computer Engineering

Oct 2017 - Sep 2019

UNIVERSITY OF PADOVA, ITALY
Department of Information Engineering

THESIS TITLE: Mining Motifs in Temporal Networks

GRADE: 110/110 e lode (*summa cum laude*)

ADVISOR: Prof. Fabio Vandin

B.S. in Computer Engineering

Oct 2014 - Sep 2017

UNIVERSITY OF PADOVA, ITALY
Department of Information Engineering

THESIS TITLE: Statistical Correlation between Alignment-free and Edit Distance Measures

GRADE: 104/110

ADVISOR: Prof. Matteo Comin

ACADEMIC APPOINTMENTS

RESEARCH FELLOW

Mar 2023 - Jun 2023

Department of Information Engineering, Unipd, Padova (Italy), working with Prof. Fabio Vandin.

VISITING PhD STUDENT

Oct 2022 - Jan 2023

Department of Computer Science, KTH, Stockholm (Sweden), advised by Prof. Aristides Gionis.

TEACHING

TEACHING ASSISTANT

2018 - 2021

Big Data Computing, Department of Information Engineering, University of Padova

TEACHING ASSISTANT

2017 - 2019

Tutorato Formativo, Department of Information Engineering, University of Padova

PUBLICATIONS

* denotes equal contribution.

† denotes contact author.

Diego Santoro* and Ilie Sarpe*†, ONBRA: *Rigorous Estimation of the Temporal Betweenness Centrality in Temporal Networks*, Accepted at ACM The Web Conference 2022 (WWW 2022). (Acceptance rate 17.7%)

Ilie Sarpe and Fabio Vandin, ODEN: *Simultaneous Approximation of Multiple Motif Counts in Large Temporal Networks*, Accepted at the 30th ACM International Conference on Information and Knowledge Management (CIKM 2021). **Selected presentation** (only a small number of works were selected for live presentation). (Acceptance rate 21.7%)

Ilie Sarpe and Fabio Vandin, *PRESTO: Simple and Scalable Sampling Techniques for the Rigorous Approximation of Temporal Motif Counts*, Accepted at the 2021 SIAM International Conference on Data Mining (SDM21). (Acceptance rate 21.15%)

TALKS AT INTERNATIONAL CONFERENCES

- 29th April 2021 *PRESTO: Simple and Scalable Sampling Techniques for the Rigorous Approximation of Temporal Motif Counts*. 2021 SIAM International Conference on Data Mining (SDM21), April 29 - May 1, 2021, Virtual Event.
- 4th November 2021 **Selected talk** *ODEN: Simultaneous Approximation of Multiple Motif Counts in Large Temporal Networks*. 30th ACM International Conference on Information and Knowledge Management (CIKM 2021), 1 - 5 November 2021, Queensland (Australia), Virtual Event.
- 28th April 2022 *ONBRA: Rigorous Estimation of the Temporal Betweenness Centrality in Temporal Networks*. ACM The Web Conference 2022 (WWW 2022), 25-29 April 2022, Lyon (France), Virtual Event.

INVITED TALKS

- 22nd December 2021 *Motifs in Temporal Networks Definitions, Algorithms and Applications*. Invited lecture for the *Learning from Networks* M.Sc. course, Department of Information Engineering, University of Padova, Italy.

FELLOWSHIPS AND AWARDS

- Oct 2022 SoBigData Transnational Access (known as TNA) support for short term visits.
- Oct 2019 - Dec 2022 PhD Fellowship from "Department of Information Engineering (DEI)", University of Padova, Italy
- 2017 Award for scientific degrees, award given to the best 500 students of scientific degrees, University of Padova, Italy
- 2017 "Mille e una lode", award for the top 5% students of the academic year 2016, University of Padova, Italy
- 2016 "Mille e una lode", award for the top 5% students of the academic year 2015, University of Padova, Italy

OTHER INFORMATION

- Program Committee Member KDD 2023
- Conference Reviewer RECOMB 2020, KDD 2020, ICDM 2020, WWW 2021, ECML-PKDD 2021, ICDM 2021, WSDM 2022, WWW 2022, KDD 2022, ICDM 2022, ACDA23, WWW 2023
- Journal Reviewer Journal of Graph Algorithms and Applications.
- Projects PRIN Project n. 20174LF3T8 AHeAD (Efficient Algorithms for Harnessing Networked Data), MIUR Italy. "SID 2020: RATED-X", University of Padova, Italy. SoBigData TNA.
- Programming Experience C++, C, Java, Python, MATLAB, SQL, NoSQL, Bash, \LaTeX
- Programming Frameworks Apache Spark, IBM ILOG CPLEX
- Languages Native Italian and Romanian Speaker, B2 English
- Software Packages Open-source software packages:
- PRESTO: an efficient sampling algorithm for estimating the count of a temporal motif in a temporal network. <https://github.com/VandinLab/PRESTO>.
 - ODEN: and efficient sampling algorithm for estimating the counts of multiple temporal motifs sharing a common topological structure. <https://github.com/VandinLab/odeN>.
 - ONBRA: an efficient algorithm for estimating the temporal betweenness centrality of the various nodes in a temporal network under two criteria for the paths considered. <https://github.com/iliesarpe/onbra>.