

Ilie Sarpe

Curriculum Vitae

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ABOUT ME

I am a postdoctoral researcher mentored by Prof. Aristides Gionis. I got my PhD in Computer Engineering under the supervision of Prof. Fabio Vandin. My research interests largely focuses the development of algorithms for the analysis of massive temporal networks. In particular, I am interested in developing data mining algorithms for analyzing patterns from large temporal networks. The algorithms I design need to be scalable and efficient. I am therefore often focused on designing sampling-based algorithms with provable theoretical guarantees.

EDUCATION

PhD Student <i>Oct 2019 - Mar 2023</i> 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 <i>Oct 2017 - Sep 2019</i> UNIVERSITY OF PADOVA, ITALY Department of Information Engineering	THESIS TITLE: Mining Motifs in Temporal Networks GRADE: 110/110 e lode (<i>summa cum laude</i>) ADVISOR: Prof. Fabio Vandin
B.S. in Computer Engineering <i>Oct 2014 - Sep 2017</i> 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

POSTDOCTORAL RESEARCHER Sep 2023 - Sep 2025	Department of Computer Science, KTH, Stockholm (Sweden), mentored by Prof. Aristides Gionis.
RESEARCH FELLOW Mar 2023 - Jun 2023	Department of Information Engineering, Unipd, Padova (Italy), mentored by 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	<i>Big Data Computing</i> , Department of Information Engineering, University of Padova
TEACHING ASSISTANT 2017 - 2019	<i>Tutorato Formativo</i> , 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, ODE \bar{N} : *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** ODE \bar{N} : *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

- 13th September 2023 *Discovering Temporal Motif Densest Subnetworks*. Workshop on Algorithmic Aspects of Clustering and Related Problems (ALACARTE 2023), Bertinoro BICI.
- 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

- Supervision
 Master students Davide Peressoni (2022, co-supervised)
 Bachelor students Filippo Ronco (2020, co-supervised)
- Program Committee Member KDD 2023, ECCB 2023, WSDM 2024
- 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, ECML-PKDD 2023, ESA 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. EC H2020 Research and Innovation project n. 871042 "SoBigData++".
- Programming Experience C++, C, Java, Python, MATLAB, SQL, NoSQL, Bash, L^AT_EX
- 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: an 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>.