Dimosthenis Pasadakis

Ai Prée 4
6993 Iseo, Lugano
Switzerland
☎ +41 798749079
✉ dimosthenis.pasadakis@usi.ch
🖫 dmspas.github.io/
ⓘD 0000-0001-8580-1023
𝄞 Scholar profile
R⁶ Dimosthenis-Pasadakis
Date of birth: July 29, 1991
Birthplace: Thessaloniki, Greece

Research focus

Development of efficient and accurate routines for the learning of large-scale graphs, and the utilization of these graphical structures in partitioning and clustering tasks.

Current occupation

Since 03/2023 **Postdoctoral fellow**, Università della Svizzera italiana (USI), Faculty of Informatics, Institute of Computing, Lugano, Switzerland.

Education

09/2018 – 02/23 **Doctor of Philosophy in Computational Science**, Università della Svizzera italiana (USI)
Supervisor: Olaf Schenk.
Ph.D. Thesis: Learning and clustering graphs from high dimensional data.

10/2021 – 11/2021 **Research visit**, Huawei Technologies, Zürich Research Center, Switzerland.

2017–2018 **Research assistant**, Università della Svizzera italiana (USI), Switzerland.

2016–2017 **Student researcher**, Università della Svizzera italiana (USI), Switzerland.

2015–2017 **Master of Science in Computational Science**, Università della Svizzera italiana (USI). Honors: *Magna cum laude*.
MSc thesis: *A three dimensional fluid-structure interaction approach for the simulation of the human heart based on an embedded boundary method*.

09/2013–02/2014 **Exchange program**, Technical University (TU) Berlin, Germany.

2009–2015 **Diploma of Physics**, Aristotle University of Thessaloniki (AUTH), Greece. Honors: *Very good*.
Undergraduate thesis: *Post-Chernobyl ^{137}Cs in the atmosphere of Thessaloniki*.

Projects as member

Since 03/23 Part of the joint German Research Foundation (DFG) - 470857344 and Swiss National Science Foundation (SNSF) - 204817 project *Numerical Algorithms, Frameworks, and Scalable Technologies for Extreme-Scale Computing*, DFG link, SNSF link

04/2019 – 02.2023 Assisted in the writing of the project proposal *Balanced Graph Partition Refinement using the Graph p-Laplacian*, Grant number: 182673, founded by SNSF for a 4-year duration. Dimensions link, SNSF link

Co-supervised student projects

2022 K. Szenes, *Spectral clustering using a multilevel approach*, Semesterarbeit, Computational Science and Engineering MSc programme, ETH Zürich.

2020 L. Najdenov, *A study of spectral clustering techniques for machine learning applications*, Bachelor's Thesis, Faculty of Informatics, USI Lugano.

2019 L. Karagyaur, V. Braglia, and L. Ferri, *A high performance video segmentation framework*, Semester project, MSc of Computational Science, USI Lugano.

2018 E. Barnett, S. Gyanchandani, and S. Rawat, *High performance topology optimization*, Semester project for the MSc of Computational Science, USI Lugano, and poster submission to the PASC'18 Conference, Basel, Switzerland.

Teaching experience as assistant

2020 – 2023 **High-Performance Computing Lab for CSE**, *Format: lab course & lectures, language: English, audience: Computational Science and Engineering (Bachelor). ETH Zürich.*

2018 – 2022 **Numerical Computing**, *Format: lab course & lectures, language: English, audience: Informatics (Bachelor). USI Lugano.*

2019 – 2021 **High Performance Computing**, *Format: lab course & lectures, language: English, audience: Computational Science (Master). USI Lugano.*

2020 **Linear Algebra**, *Format: lab course & lectures, language: English, audience: Informatics (Bachelor). USI Lugano.*

Software

2022 **SQUIC** ⚕, Part of the SQUIC team, estimating large-scale sparse precision matrices via a GLASSO optimization routine. www.gitlab.ci.inf.usi.ch/SQUIC/libSQUIC.

List of publications

Note: Equal contribution is denoted by an asterisk (*). The list is in reversed chronological order.

Journal articles

○ D. Pasadakis, M. Bollhöfer, and O. Schenk, *Sparse quadratic approximation for graph learning*, IEEE Transactions on Pattern Analysis and Machine Intelligence, April 2023. doi

○ D. Pasadakis, C. L. Alappat, O. Schenk, and G. Wellein, *Multiway p-spectral graph cuts on Grassmann manifolds*, Machine Learning 111, 791–829, 2022. doi

○ A. Eftekhari*, D. Pasadakis*, M. Bollhöfer, S. Scheidegger, and O. Schenk, *Block-enhanced precision matrix estimation for large-scale datasets*, Journal of Computational Science, vol. 53, 2021. doi

Conference papers

○ T. Simpson, D. Pasadakis, D. Kourounis, K. Fujita, T. Yamaguchi, T. Ichimura, and O. Schenk, *Balanced graph partition refinement using the graph p-Laplacian*, in Proceedings of the Platform for Advanced Scientific Computing Conference, ser. PASC'18. New York, NY, USA: ACM, 2018. doi

Preprints

○ A. Eftekhari, L. Gaedke-Merzhäuser, D. Pasadakis, M. Bollhöfer, S. Scheidegger, O. Schenk, *Large-Scale Precision Matrix Estimation With SQUIC*, SSRN, 2022, *Submitted to ACM Transactions on Mathematical Software*. preprint

Selected posters

○ D. Pasadakis, D. Kourounis, and O. Schenk, *Balanced graph partition refinement in the p-norm*, International Conference on Continuous Optimization (ICCOPT'19), 2019.

○ D. Pasadakis, D. Kourounis, and O. Schenk, *Spectral graph partitioning in the p-norm*, in Computational Science at Scale (CoSaS'18), 2018.

○ D. Pasadakis, M. Nestola, F. Maffessanti, B. Becsek, D. Obrist, R. Krause, *Fluid-structure interaction simulations of the heart*, in Platform for Advanced Scientific Computing Conference (PASC'17), 2017.

○ D. Pasadakis, D. Kourounis, and O. Schenk, *Estimation of drag and lift coefficients for steady state incompressible flow of a newtonian fluid on domains with periodic roughness*, in Platform for Advanced Scientific Computing Conference (PASC'16), 2016.

Conference & seminar talks

○ *Sparse quadratic approximation for graph learning*. 2022, June 29; Platform for Advanced Scientific Computing Conference (PASC'22), Congress Center Basel, Switzerland.

○ *Multiway p-spectral graph cuts on Grassmann manifolds*. 2021, September 13; Swiss Numerics Day (SND'21), EPFL, Lausanne, Switzerland.

○ *Multiway p-spectral clustering on Grassmann manifolds*. 2021, May 17; SIAM Conference on Applied Linear Algebra (LA'21), virtual event, New Orleans, USA.

○ *Spectral graph partition refinement using the graph p-Laplacian*. 2019, August 08; International Conference on Continuous Optimization (ICCOPT'19), Technical University (TU), Berlin, Germany.

○ *Improvement of graph partitions using the graph p-Laplacian*. 2018, July 3; Platform for Advanced Scientific Computing Conference (PASC'18), Congress Center Basel, Switzerland.

○ *Balanced graph partition refinement using the graph p-Laplacian*. 2018, March 9; SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP18), Waseda University, Tokyo, Japan.

○ *Fluid-structure interaction simulations of the human heart*. 2017, September 28; Seminar Talk, ARTORG Center for Biomedical Engineering, University of Bern, Switzerland.

Outreach

- Our article *Multiway p-spectral graph cuts on Grassmann manifolds* featured in the December 2021 newsletter of the National Centre for High Performance Computing of the University of Erlangen (NHR@FAU). Newsletter link

Service

- Chair of ACM Papers Session 1B at the PASC'22 conference. Session link
- Reviewer for SIAM journal on scientific computing (SISC), and Bayesian Analysis (BA).

Prizes & awards

- Best poster award. Category: Computer Science and Applied Mathematics. PASC'16, Lausanne, Switzerland.
- Best poster award, 3rd place runner-up. PASC'18, Basel, Switzerland.