Zhengchao Wan

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Education

The Ohio State University **Columbus, OH, USA**
Ph.D. Candidate in Mathematics *2016-present*
Advisor: Facundo Mémoli

Peking University **Beijing, China**
B.S. in Mathematics *2012-2016*
Advisor: Bin Dong

Research Interests

Metric geometry, computational geometry, optimal transport, topological data analysis

Papers

Facundo Mémoli and Zhengchao Wan. Characterization of Gromov-type geodesics. *arXiv preprint arXiv:2105.05369*, 2021.

Facundo Mémoli, Axel Munk, Zhengchao Wan, and Christoph Weitkamp. The ultrametric Gromov-Wasserstein distance. *arXiv preprint arXiv:2101.05756*, 2021.

Facundo Mémoli, Zhengchao Wan, and Yusu Wang. Persistent Laplacians: properties, algorithms and implications. *arXiv preprint arXiv:2012.02808*, 2020.

Zhengchao Wan. A novel construction of urysohn universal ultrametric space via the Gromov-Hausdorff ultrametric. *Topology and its Applications*, 300:107759, 2021.

Kun Jin, Facundo Mémoli, and Zhengchao Wan. The Gaussian transform. *arXiv preprint arXiv:2006.11698*, 2020.

Facundo Mémoli, Zane Smith, and Zhengchao Wan. Gromov-Hausdorff distances on p-metric spaces and ultrametric spaces. *arXiv preprint arXiv:1912.00564*, 2019.

Facundo Mémoli, Zane Smith, and Zhengchao Wan. The Wasserstein transform. In *International Conference on Machine Learning*, pages 4496–4504. PMLR, 2019.

Computational Software / Expository Webpages

Persistent Laplacian (with F. Mémoli and Y. Wang)
https://github.com/ndag/Persistent-Laplacian

Gromov-Hausdorff distances between ultrametric spaces (with F. Mémoli and Z. Smith)
https://github.com/ndag/ultrametrics

The ultrametric Gromov-Wasserstein distances (with F. Mémoli, A. Munk and C. Weitkamp)
https://github.com/ndag/uGW

Talks

Geometry and Topology meet Data Analysis and Machine Learning (GTDAML 2021) *July 2021*
Persistent Laplacians: properties, algorithms and implications

Seminar at Centre for Topological Data Analysis, Oxford University *May 2021*
Persistent Laplacians: properties, algorithms and implications

Algebraic Topology: Methods, Computation, and Science (hosted by AATRN) *Jan. 2021*
Computing the Gromov-Hausdorff distance between ultrametric spaces

Topology, Geometry, and Applications - Graduate Students Seminar at Ohio State *Oct. 2020*
Urysohn universal ultrametric space

Geometry, Topology and Data Seminar, Florida State University *Nov. 2019*
The Wasserstein transform

Topology, Geometry, and Applications - Graduate Students Seminar at Ohio State *Sep. 2019*
Gromov-Hausdorff distance between ultrametric spaces

Air Force Research Lab in Dayton, Ohio *July 2019*
The Wasserstein transform

Talks in Mémoli's group seminars
Multiple talks on topics including differential geometry, metric geometry, etc

Poster Presentations

International Conference on Machine Learning, ICML 2019 *June 2019*
The Wasserstein transform

GTDAML2019, the Ohio State University *May 2019*
The Wasserstein transform

Geometric Data Analysis, University of Chicago *May 2019*
The Wasserstein transform

Honors and Awards

Special Graduate Assignments, the Ohio State University *Spring 2020*

Travel Award, ICML2019 *June 2019*

Alumina Yizheng Distinguished Scholar Award, Peking University *Oct. 2014*

Jiang Zehan Scholarship, Peking University *Sep. 2013*

Teaching Experiences

MATH 1172, the Ohio State University *Spring 2021*
Engineering Mathematics A

MATH 1172, the Ohio State University *Autumn 2018*
Engineering Mathematics A

Mini-Course, Peking University *Summer 2016*
Information Geometry

Professional Services

Organization of activities

Midwest Student Conference GTDAML2019, the Ohio State University *June 2019*
Co-organizer

Referee

SOCG(2021), SODA(2019)