

Zhengchao Wan

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Education

The Ohio State University

Ph.D. Candidate in Mathematics

Advisor: Facundo Mémoli

Columbus, OH, USA

2016-present

Peking University

B.S. in Mathematics

Advisor: Bin Dong

Beijing, China

2012-2016

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

Seminar at Centre for Topological Data Analysis, Oxford University

Persistent Laplacians: properties, algorithms and implications

May 2021

Algebraic Topology: Methods, Computation, and Science (hosted by AATRN) <i>Computing the Gromov-Hausdorff distance between ultrametric spaces</i>	<i>Jan. 2021</i>
Topology, Geometry, and Applications - Graduate Students Seminar at Ohio State <i>Urysohn universal ultrametric space</i>	<i>Oct. 2020</i>
Geometry, Topology and Data Seminar, Florida State University <i>The Wasserstein transform</i>	<i>Nov. 2019</i>
Topology, Geometry, and Applications - Graduate Students Seminar at Ohio State <i>Gromov-Hausdorff distance between ultrametric spaces</i>	<i>Sep. 2019</i>
Air Force Research Lab in Dayton, Ohio <i>The Wasserstein transform</i>	<i>July 2019</i>
Talks in Mémoli's group seminars <i>Multiple talks on topics including differential geometry, metric geometry, etc</i>	

Poster Presentations.....

International Conference on Machine Learning, ICML 2019 <i>The Wasserstein transform</i>	<i>June 2019</i>
GTDAML2019, the Ohio State University <i>The Wasserstein transform</i>	<i>May 2019</i>
Geometric Data Analysis, University of Chicago <i>The Wasserstein transform</i>	<i>May 2019</i>

Honors and Awards

Special Graduate Assignments, the Ohio State University	<i>Spring 2020</i>
Travel Award, ICML2019	<i>June 2019</i>
Alumina Yizheng Distinguished Scholar Award, Peking University	<i>Oct. 2014</i>
Jiang Zehan Scholarship, Peking University	<i>Sep. 2013</i>

Teaching Experiences

MATH 1172, the Ohio State University <i>Engineering Mathematics A</i>	<i>Spring 2021</i>
MATH 1172, the Ohio State University <i>Engineering Mathematics A</i>	<i>Autumn 2018</i>
Mini-Course, Peking University <i>Information Geometry</i>	<i>Summer 2016</i>

Professional Services

Organization of activities.....

Midwest Student Conference GTDAML2019, the Ohio State University <i>Co-organizer</i>	<i>June 2019</i>
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Referee.....

SOCG(2021), SODA(2019)