Workshop "Workshop on Applied Topology 2019"

Date: January 7-11, 2019

Place: Maskawa Building for Education and Research, Kyoto University, Japan

Access: https://www.kyoto-u.ac.jp/en/access/north-campus-map.html

Program

Monday, January 7

8:45 – 9:30	Registration
9:30 – 10:30	Mark Grant (University of Aberdeen) 1 Topological Aspects of Robot Motion Planning 1
10:30 – 10:45	Coffee Break
10:45 – 11:45	Xianfeng David Gu (Stony Brook University) 1 Discrete Surface Ricci Flow and Its Topological Application
11:45 – 13:30	Lunch Break
13:30 – 14:00	Dmitry Feichtner-Kozlov (University of Bremen) Computing Explicit Homology Classes Using Discrete Morse Theory
14:00 – 14:30	Jay Shah (University of Notre Dame) Algorithmic Canonical Stratifications of Simplicial Complexes
14:30 – 15:00	Coffee Break
15:00 – 15:30	Gard Spreemann (École Polytechnique Fédeŕale de Lausanne) Homological Clustering and Simplicial Convolutional Neural Networks
15:30 – 16:00	Jacek Brodzki (University of Southampton) Topological Analysis of the Chemical Space: Understanding Aqueous Solubility
16:00 – 16:30	Break
16:30 – 17:00	Yuuki Shimizu (Kyoto university) Point Vortex Dynamics on Minimal Surfaces
17:00 – 17:30	Michio Yoshiwaki (RIKEN AIP/Kyoto University/Osaka City University) On Interval Decomposability of 2D Persistence Modules

Tuesday, January 8

9:30 – 10:30	Matthew Kahle (The Ohio State University) 1 Configuration Spaces of Hard Disks in An Infinite Strip
10:30 – 10:45	Coffee Break
10:45 – 11:45	Takashi Sakajo (Kyoto University) 1 Classification of 2D Hamiltonian Vector Fields and Topological Flow Data Analysis: Theory, Computation and applications 1
11:45 – 13:30	Lunch Break
13:30 – 14:00	Arseniy Akopyan (IST Austria) Waists of Balls in Different Spaces
14:00 – 14:30	Emerson G. Escolar (RIKEN AIP/Kyoto University) Every 1D Persistence Module is a Restriction of Some Indecomposable 2D Persistence Module
14:30 – 15:00	Coffee Break
15:00 – 15:30	Justin Michael Curry (SUNY Albany) Refining Persistence via Enriched Topological Summaries
15:30 – 16:00	Nicolas Berkouk (INRIA Saclay) A Derived Isometry Theorem for Constructible Sheaves on $\mathbb{R}$
16:00 – 17:30	Poster Session

Wednesday, January 9

9:30 – 10:30	Peter Bubenik (University of Florida) 1 Learning geometry using topology and persistence landscapes
10:30 – 10:45	Coffee Break
10:45 – 11:45	Mark Grant (University of Aberdeen) 2 Topological Aspects of Robot Motion Planning 2
18:00 – 20:00	Banquet

Thursday, January 10

9:30 – 10:30	Xianfeng David Gu (Stony Brook University) 2 Surface Foliations and Holomorphic Quadratic Differentials
10:30 – 10:45	Coffee Break
10:45 – 11:45	Matthew Kahle (The Ohio State University) 2 Cycles in Random Simplicial Complexes, Large and Small
11:45 – 13:30	Lunch Break
13:30 – 14:00	Ran Levi (University of Aberdeen) Synaptic plasticity through topological methods
14:00 – 14:30	Takaaki Nara (The University of Tokyo) Localization of The Neural Current Source in The Human Brain Based on a Mapping from a Sphere to the Cortical Surface
14:30 – 15:00	Coffee Break
15:00 – 15:30	Marian Mrozek (Jagiellonian University) Conley Complexes and Connection Matrices in Combinatorial Topological Dynamics
15:30 – 16:00	Mateusz Juda (Jagiellonian University) Helioseismic and Magnetic Imager Data Classification using Combinatorial Topological Dynamics
16:00 – 16:30	Break
16:30 – 17:00	Victoria Vedyushkina (Lomonosov Moscow State University) Integrable Billiards: Generalizations and Applications to Mechanics
17:00 – 17:30	Kelly Spendlove (Rutgers University) A Computational Framework for Connection Matrix Theory

Friday, January 11

9:30 – 10:30	Takashi Sakajo (Kyoto University) 2 Classification of 2D Hamiltonian Vector Fields and Topological Flow Data Analysis: Theory, Computation and applications 2
10:30 – 10:45	Coffee Break
10:45 – 11:45	Peter Bubenik (University of Florida) 2 Algebraic distances for persistent homology

This workshop is supported by

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Organizing committee:
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Local organizers:
Emerson Escolar (RIKEN AIP/Kyoto University)
Killian Meehan (Kyoto University)
Fumiko Ogushi (Kyoto University)
Michio Yoshiwaki (RIKEN AIP/Kyoto University/Osaka City University)

List of poster talks

PT-01 Henry Kirveslahti Sub-image analysis using topologial summary statistics
PT-02 Marcio Gameiro Predicting protein stability via persistent homology
PT-03 Georg Osang Analyzing sphere packings with higher order persistence
PT-04 Katharina Oelsboeck Manipulating hole systems
PT-05 Sergey Avvakumov Convex fair partitions into arbitrary number of pieces
PT-06 Woojin Kim Rank invariant for zigzag modules
PT-07 Vladislav A. Kibkalo Fomenko-Zieschang invariants and topology of Kovalevskaya integrable systems
PT-08 Irina Kharcheva Generalized integrable billiards and Fomenko conjecture.
PT-09 Huy Mai Integral transforms with respect to the Euler characteristic integration
PT-10 Jisu Kim Persistent homology of KDE filtration on Rips complex
PT-11 Lacombe Théo Metrics for persistence diagrams: An optimal transport view
PT-12 Dejan Govc Rips magnitude
PT-13 Oliver Vipond Multiparameter persistence landscapes
PT-14 Syed Mohamad Sadiq Bin Syed Musa Early warning signal for floods using persistent homology
PT-15 Arturo Espinosa Baro Thoughts on sectional category and relative cohomology
PT-16 Nur Fariha Syaqina Zulkepli Cluster analysis of haze episodes based on topological features
PT-17 Fatimah Abdul Razak Persistent homology on malaysian data sets
PT-18 Kang-Ju Lee Simplicial Kirchhoff index
PT-19 Lewis Mead Large random simplicial complexes
PT-20 Yu-Min Chung Persistence curves: A new vectorization of persistence diagrams
PT-21 Yingying Wu Comparison theorems of phylogenetic spaces and algebraic fans
PT-22 Akshay Goel Persistent homology of random Čech complexes on manifolds
PT-23 Killian Meehan Auslander-Reiten graph distance as a bottleneck metric
PT-24 Younng-Jin Kim Harmonic cycles and rational winding numbers
PT-25 Tatsuya Mikami Percolation on homology generators in codimension one
PT-26 Kiyotaka Suzaki A limit theorem for persistence diagrams of random complexes built over marked point processes
PT-27 Jose Gabriel Carrasquel Vera Sectional category á la Quillen
PT-28 Zbigniew Błaszczyk Topological complexity and efficiency of motion planning algorithms
PT-29 Teresa Heiss Streaming algorithm for Euler characteristic curves of multidimensional images