Du
10
OCT.
2022
au
14
OCT.
2022

09h00
-
18h00

2022-T3 GEOMETRY & STATISTICS IN DATA SCIENCES

Geometry, Topology and Statistics in Data Sciences

Institut Henri Poincaré
Amphithéâtre Hermite
11 rue Pierre et Marie Curie 75005 Paris

INSCRIPTION

Geometry, Topology and Statistics in Data Sciences

10-14 October - IHP, Paris

On one hand, modern data science makes use ofTopological Data Analysis in a preliminary step to obtain structural information before processing supervised or unsupervised methods. On the other hand, when a priori knowledge of a Riemannian manifold containing the data is available, shape analysis proposes to adapt mathematical statistics tools to infer geometric and statistical properties.

URL de la page : https://www.ihp.fr/fr/agenda/geometry-topology-and-statistics-data-sciences-0&is_pdf=true

Program

- **Abstracts**
- **General info handout**

Invited Speakers

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- Dominique Attali (GIPSA-lab)
  - *Reconstructing manifolds by weighted ℓ_1-norm minimization* (video)
- Martin Bauer (Florida State University)
  - *Elastic shape analysis of surfaces*
- Omer Bobrowski (Technion Israel Institute of Technology)
  - *Universality in random persistence diagrams* (video)
- Frédéric Barbaresco (Thales)
  - *Symplectic foliation model of information geometry for statistics and learning on Lie groups* (video)
- Claire Brécheteau (Ecole Centrale de Nantes)
  - *Approximating data with a union of ellipsoids and clustering*(video)
- Nicolas Charon (Johns Hopkins University)
  - *Registration of shape graphs with partial matching constraints*(video)
- Herbert Edelsbrunner (Institute of Science and Technology Austria)
  - *Chromatic Delaunay mosaics for chromatic point data* (video)
- Barbara Gris (Sorbonne University)
  - *Defining data-driven deformation models* (video)
- Joan Glaunès (Université Paris Cité)
  - *Geometric methods for diffeomorphic registration, and the KeOps library*(video)
- Heather Harrington (Oxford University)
  - *Shape of data in biology*(video)
- Kathryn Hess (EPFL)
  - *Morse-theoretic signal compression and reconstruction* (video)
- Irène Kaltenmark (Université de Paris)
  - *Curves and surfaces. Partial matching in the space of varifolds*(video)
- Eric Klassen (Florida State University)
  - *The square root normal field and unbalanced optimal transport*
- Johannes Krebs (KU Eichstaett)
  - *On the law of the iterated logarithm and Bahadur representation in stochastic geometry*
- Nina Miolane (UC Santa Barbara)
  - *Geomstats: a Python package for Geometric Machine Learning*
- Steve Oudot (Inria Paris Saclay)
  - *Optimization in topological data analysis*
- Victor Patrangenaru (Florida State University)
  - *Geometry, topology and statistics on object spaces*
- Stephen Preston (City University of New York)
  - *Isometric immersions and the waving of flags* (video)
- Stefan Horst Sommer (University of Copenhagen)
  - *Diffusions means in geometric statistics*
- Katharine Turner (Australian National University)
  - *The extended persistent homology transform for manifolds with boundary*
- Yusu Wang (UC San Diego)
  - *Comparing graphs with node attributes: Wesifeiler-Lehman meets Gromov-Wasserstein*
- Laurent Younes (Johns Hopkins University)
  - *Stochastic gradient descent for large-scale LDDMM* (video1 , video2)

Cocktail

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For logistical reasons, to join the cocktail at Tour Zamansky, please ensure that you are registered to attend the workshop in person.

Lunches (Info handout)

- Institut Henri Poincaré's neighborhood has plenty of diverse food places.
  The two-hour lunch breaks give you enough time to eat in a restaurant, or to grab something to take away.

INSTITUT HENRI POINCARÉ - UAR839

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HORAIRES

L'institut :
• lundi au vendredi de 8h30 à 18h,
• fermé les jours fériés.

Le musée - Maison Poincaré :
• lundi, mardi, jeudi et vendredi
de 9h30 à 17h30,
• samedi de 10h à 18h,
• fermé le mercredi et le dimanche.

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