Raphaël Tinarrage

Born 09/06/1993
06 72 92 68 04
raphael.tinarrage@fgv.br
https://raphaeltinarrage.github.io/
Largo do Machado, Rio de Janeiro, Brazil

Activity

2021-2022 **Post-doctorate**, *FGV EMAp Rio de Janeiro*.
Theory and applications of Topological Data Analysis
Advisor: César Camacho

2017-2020 **Doctorate**, *Inria Saclay and LMO Orsay*, *Thesis: Topological inference from measures and vector bundles*.
Advisors: Frédéric Chazal et Marc Glisse
Manuscript: `https://raphaeltinarrage.github.io/files/Tinarrage_Dissertation.pdf`

2016–2017 **Master**, *ENS, Paris-Saclay University*, Orsay, *M2R mathematics for life sciences*.

2015–2016 **Master**, *Ecole normale supérieure*, Cachan, *M2 Preparation to the Agregation degree*.
Accepted, rank 68^{th}

2014–2015 **Master**, *Paris-Sud University*, Orsay, *M1 Fundamental and applied mathematics, Magistère de mathématiques* 2^{nd} *year*.

2013–2014 **Licence**, *Paris-Sud University*, Orsay, *L3 Fundamental and applied mathematics, Magistère de mathématiques* 1^{st} *year*.
Licence degree

2011–2013 **CPGE (Preparatory classes)**, *Camille Pissaro High School*, Pontoise, *MPSI and MP*.

Publications and pre-prints

02/2020 **Computing persistent Stiefel-Whitney classes of line bundles**, *`https://arxiv.org/abs/2005.12543`*.
Preprint

12/2019 **Recovering the homology of immersed manifolds**, *`https://arxiv.org/abs/1912.03033`*.
Preprint

11/2018 **DTM-based filtrations**, *`https://arxiv.org/abs/1811.04757`*, with Hirokazu Anai, Frédéric Chazal, Marc Glisse, Yuichi Ike, Hiroya Inakoshi, Raphaël Tinarrage and Yuhei Umeda.
Published in Symposium Abel 2018 proceedings (`https://link.springer.com/chapter/10.1007/978-3-030-43408-3_2`) and SoCG 2019 conference (`https://drops.dagstuhl.de/opus/volltexte/2019/10462/`)

Implementations

These previous works led to the creation of the package *velour*, written in Python, and available on
GitHub: `https://github.com/raphaeltinarrage/velour`
PyPI: `https://pypi.org/project/velour/`

Talks and posters

04/2021 **Talk for SoCG - Minisymposium on Computational Topology**, online.
Simplicial approximation to CW-complexes in practice
Slides: `https://raphaeltinarrage.github.io/files/Slides_SoCG2021.pdf`
Video: `https://www.youtube.com/watch?v=PaKkzcMZC70`

04/2021 **Talk for EMAp Seminário**, FGV EMAp, online.
Topological inference in Topological Data Analysis II: Persistence barcodes
Slides: `https://raphaeltinarrage.github.io/files/Slides_EMApII2021.pdf`
Video: `https://www.youtube.com/watch?v=HfkuIqxhjGY`

04/2021 **Talk for EMAp Seminário**, FGV EMAp, online.
Topological inference in Topological Data Analysis I: Topology in datasets
Slides: `https://raphaeltinarrage.github.io/files/Slides_EMApI2021.pdf`
Video: `https://www.youtube.com/watch?v=fqeazsBn3RE`

12/2020 **Talk for Modelling, Analysis and Scientific Computing**, *UMPA Lyon*, online.
Introduction à l'homologie persistante
Slides: https://raphaeltinarrage.github.io/files/Slides_UMPA2020.pdf

12/2020 **Talk for Applied Algebraic Topology Network**, online.
Persistent Stiefel-Whitney classes
Slides: https://raphaeltinarrage.github.io/files/Slides_AATRN2020.pdf
Video: https://www.youtube.com/watch?v=xnQdGRvWenw

11/2020 **Talk for Applied Topology Seminar**, *EPFL*, online.
Persistent Stiefel-Whitney classes
Slides: https://raphaeltinarrage.github.io/files/Slides_EPFL2020.pdf
Video: https://www.youtube.com/watch?v=-AGpfIo8RsA

10/2020 **Thesis defense**, *LMO*, Orsay.
Topological inference from measures and vector bundles
Slides: https://raphaeltinarrage.github.io/files/Slides_Dissertation.pdf
Video: https://youtu.be/kHGv8BfeHho

06/2020 **Talk for Symposium on Computational Geometry**, *Young Researchers Forum*, online.
Recovering the homology of immersed manifolds
Slides: https://raphaeltinarrage.github.io/files/Slides_SoCG2020.pdf
Video: https://www.youtube.com/watch?v=mXRjvwJJ8m8

05/2020 **Talk for séminaire des doctorants**, *Séminaire informel d'Orsay*, online.
Introduction à l'homologie persistante
Slides: https://raphaeltinarrage.github.io/files/Slides_seminaire_informel.pdf
Video: https://www.youtube.com/watch?v=uDba3kV3Sf0

03/2020 **Talk for DATASHAPE seminar**, *Inria Saclay*, Orsay.
Introduction aux classes caractéristiques
Notes: https://raphaeltinarrage.github.io/files/Notes_Datashape2020.pdf

10/2019 **Talk for DATASHAPE seminar**, *Inria Saclay*, Orsay.
Estimer l'homologie des variétés immergées
Slides: https://raphaeltinarrage.github.io/files/Slides_Datashape2019.pdf

04/2019 **Talk for Symposium on Computational Geometry**, *Portland*, Oregon.
DTM-based filtrations
Slides: https://raphaeltinarrage.github.io/files/Slides_SoCG2019.pdf

04/2019 **Talk for équipe Topo-Dyn**, *LMO*, Orsay.
DTM-filtrations

02/2019 **Talk for séminaire des doctorants**, *LAMFA*, Amiens.
Introduction à l'homologie persistante

12/2018 **Talk for séminaire des doctorants**, *IMJ-PRG*, Jussieu, Paris.
Introduction à l'homologie persistante

12/2018 **Talk for séminaire des doctorants**, *LMO*, Orsay.
Introduction à l'homologie persistante

11/2018 **Talk for DATASHAPE seminar**, *Inria Saclay*, Orsay.
DTM-filtrations

06/2018 **Poster presentation**, *Conférence ATMCS*, IST-Austria, Klosterneuburg (Autriche).
DTM-filtrations
Poster: https://raphaeltinarrage.github.io/files/Poster_ATMCS.pdf

Teaching

Jan 2020 **Topological Data Analysis with Persistent Homology**, *FGV EMAp*, Rio de Janeiro.
Summer course
Course website: https://raphaeltinarrage.github.io/EMAp.html
Course notes: https://raphaeltinarrage.github.io/files/EMAp/SummerCourseTDA.pdf
Videos: https://www.youtube.com/playlist?list=PL_FkltNTtklB221BEq6zwb_FX5bIr7dvx

2017-2020 **Organization of atelier MATh.en.JEANS**, *Collège Alain Fournier*, Orsay.
Vulgarisation of mathematics in middle school
Notes: https://raphaeltinarrage.github.io/MEJ.html

2017-2020 **Statistical interpretation of data**, *UE M331, L3 MINT, Université Paris-Sud*, Orsay.
Assistant professor, TP

2017-2020 **Modelisation project**, *UE M326, L3 MINT, Université Paris-Sud*, Orsay.
Assistant professor, TP

2017-2019 **Ordinary differential equations**, *UE M257, L2 BC, Université Paris-Sud*, Orsay.
Assistant professor, TD
Notes: `https://raphaeltinarrage.github.io/M257.html`

Other scientific works

2014-2017 **Co-direction of In Vitro Artificial Intelligence**, *Centre de Recherche Interdisciplinaire*, Paris.
Synthetic neurology club

2016 **Research work**, *for M2R*.
Stochastic modelisation of aging, genetic evolution

2015 **Master Thesis**, *for magistère de mathématiques*.
Dynamics on flat surfaces

2014 **Licence Dissertation**, *for magistère de mathématiques*.
Introduction to differential geometry

2013 **Short Dissertation**, *for MP*.
Classification of finite simple groups