



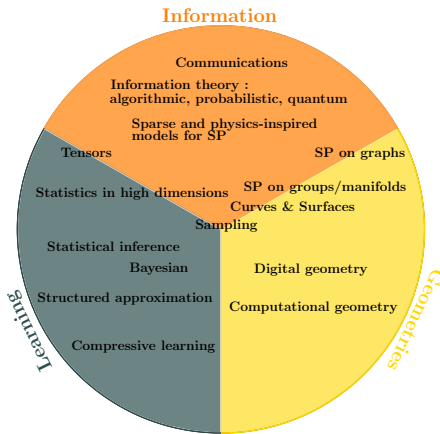
GAIA Géométries, Apprentissage, Information & Algorithmes

Welcome day 2024

15/11/2024



Research topics



Methodological tools for modelization, analysis and interpretation of structured, high dimensional and large data-sets.

Conception of efficient algorithms for inference, supervised and accurate processing.



Operating mode

► Governance

- ▶ *Team leader* : Isabelle Sivignon
- ▶ *In practice* : co-team leader Nicolas Le Bihan

► Research topics

- ▶ *Geometry* : Simon Barthelmé
- ▶ *Information* : Pierre-Olivier Amblard
- ▶ *Learning* : Florent Chatelain

► Human resources

- ▶ 20 lecturers/researchers (UGA/INP/CNRS)
- ▶ 16 PhD students/Postdocs

► Animation

- ▶ Meetings almost every week (organized by G. Becq)
- ▶ GAIA seminars ~6/year (organized by S. Barthelmé et A. Chatalic)
- ▶ Budget : GAIA animation budget line + mutualization



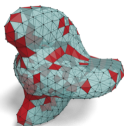


What we work on in GAIA

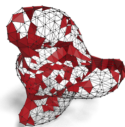
Geometry : digital representation of shapes



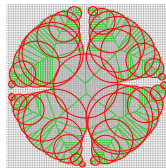
P



$\text{Del}(P, \alpha)$

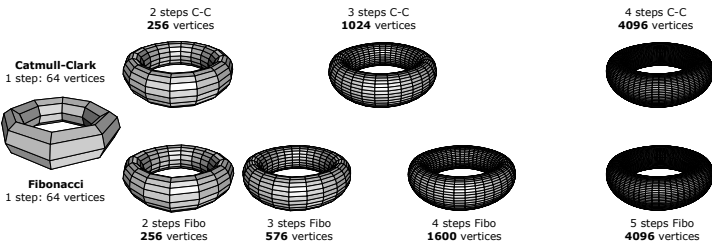


slivers



New 2D-subdivision schemes based on L-systems

to widen the set of possible transition speeds between scales to non integer ratios

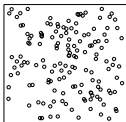




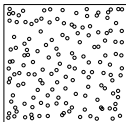
What we work on in GAIA

Sampling and signal on graphs

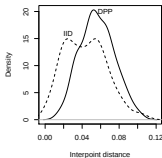
a.



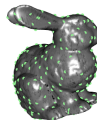
b.



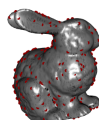
c.



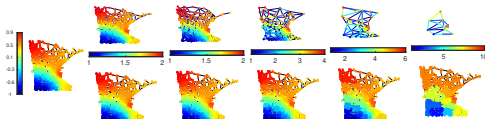
DPP



Independent



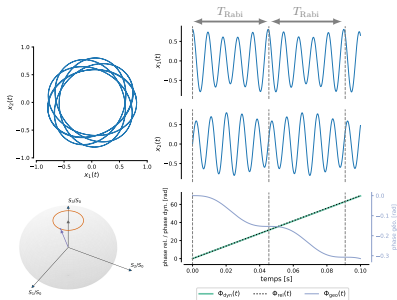
Graph-based data?



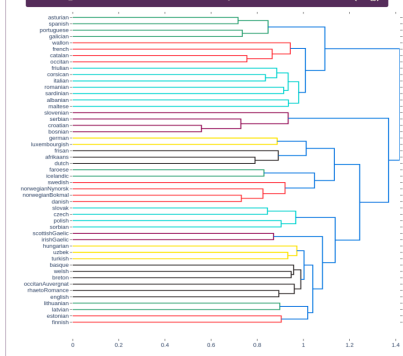


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Signal and information processing



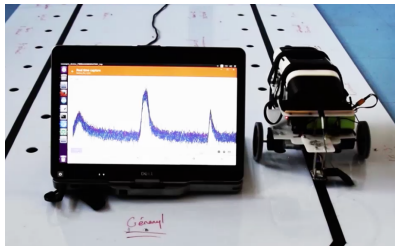
Exemple 2 : Similarité entre systèmes d'écriture (K_d)



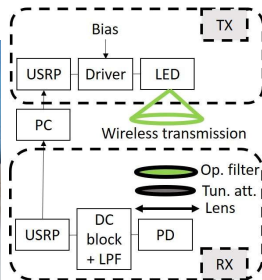


What we work on in GAIA

More application-oriented activities



(a)



(b)



(c)



- ▶ **Applications** : Physics (astrophysics, geophysics , biophysics, quantum), communications, etc.
- ▶ ***Sustainable* research and impacts** : publications, travels, AI et digital information, society.