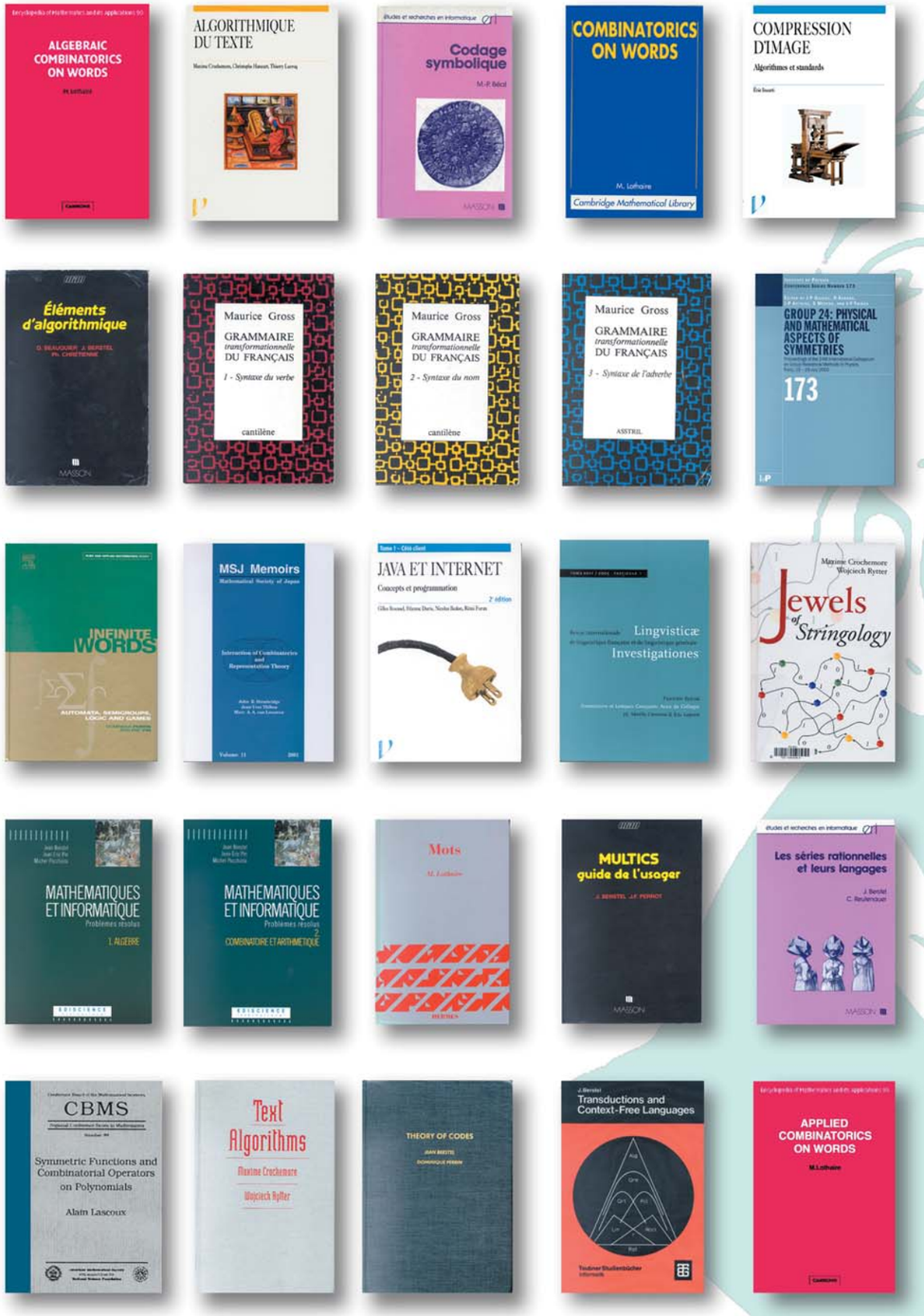

Laboratoire d'informatique Institut Gaspard-Monge

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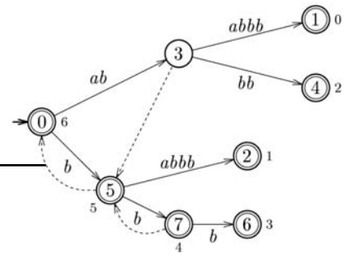
Research topics

http://igm.univ-mlv.fr/LabInfo/

Text algorithmics

Methodological bases for documentary search, indexation of search engines, tools for genetic sequence analysis and system software for text processing (such as text edition, processing and compression).

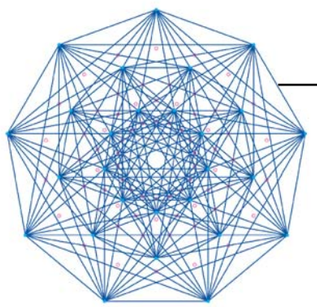


Algorithmics for genomics

Algorithmic and statistic aspects of the treatement of molecular sequences taken as sequences of symbols.

Coding and compression

Investigation of the methods for representing, storing and transmitting data (text, fixed or animated images, sound...).



Hessien polyhedron

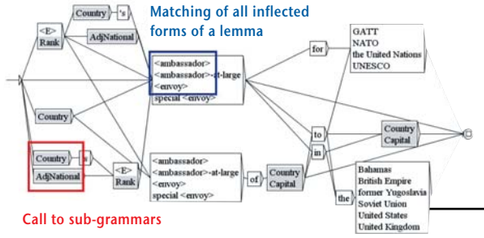
Algebraic combinatorics and symbolic computation

- Interface between discrete mathematics and computer science.
- Symbolic computation software : Maple/ACE, MuPAD/Combinat.
- Permutations, partitions, tableaux, symmetric functions : combinatorics of classical groups, representation theory, invariant theory, quantum groups, Hecke algebras, Schubert polynomials.
- Applications : statistical physics, quantum information, communications.

Combinatorics on words

This research domain has developed considerably in several branches of mathematics such as number theory, group theory or probability theory.
It appears frequently in problems arising in theoretical computer science in relation with automata and formal languages.

Lothaire miniature, XVI century



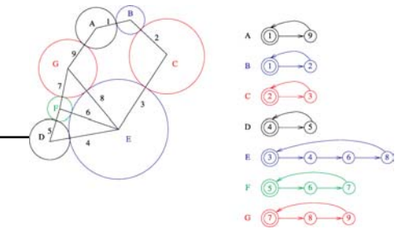
Computational linguistics

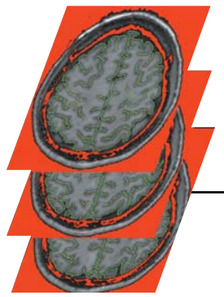
In the domain of natural language processing we have three main goals :

- Production of electronic dictionaries.
- Access to the information in large textual data bases : recognition and indexation of terminology, resolution of ambiguity...
- Constitution of lexicon-grammars, which are a systematic, formal description of syntax.

Generic programming and network

Development of generic programming tools in order to reuse implementations without modification.
Development of network software : data coherence on the Web or in the context of peer-to-peer applications ; routing in the context of ad-hoc mobile networks.



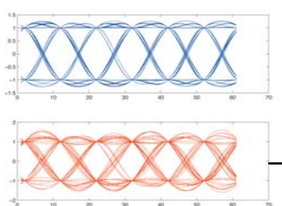


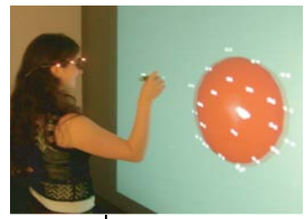
Discrete structures and imagery

Research on discrete topology and its applications to image processing, homotopic transformations, topological filtering, mathematical morphology and computational geometry. Development of applications in 2D and 3D bio-medical imaging, and in material and document image processing.

Signal and communications

- Study of the performances of the physical layer of communication systems.
- Separation and blind signal demodulation of unknown transmitters.
- Entropic inequalities.
- Wavelet image analysis.





Simulations, images, sounds and art relay

Realistic rendering and simulation of light phenomena, geometric modelling, virtual reality, and special effects in image processing.

Doctoral studies

http://igm.univ-mlv.fr/LabInfo/ScInfo/

Speciality « Science informatique » of the master « Sciences et ingénierie de l'information, des télécommunications et de la modélisation » of the Marne-la-Vallée University.
This programme prepares to research in computer science. It leads naturally to the preparation of a doctoral thesis or to a position in research and development in industrial laboratories.

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