Information Retrieval			14X011

			Stéphane MARCHAND-MAILLET (PAS)	
Nombre d'heures par semaine	cours exercices pratique	2 2 1*	Semestre d'automne Semestre de printemps Total d'heures	⊠ 56/70*

Cursus	Type	Crédits ECTS
Master en sciences informatiques 90 ECTS	Option	4
Master en sciences informatiques 120 ECTS	Option	5

OBJECTIFS :

This course presents Classical and Modern Information Retrieval (IR) techniques applied to all media from text to image and audio and over networks (web and social nets). It also studies in depth related subjects such as Recommender Systems and Social Network Analysis.
The course presents a strong theoretical basis and also embarks students in applied labs to fully grasp the extent of large-scale Information Retrieval Challenges. Classical IR packages (Apache, Python,…)
This course requires and develops theoretical knowledge in Linear Algebra, Probabilities and Machine Learning. It goes side by side with other AI and ML courses.

CONTENU :

- Review of the main principles of Information Retrieval
- Classical IR models: Vector Space, Probabilistic
- Low-rank models for IR (LSI) and Recommender Systems
- Learning to Rank models
- Indexing models
- Specific media properties:
    - Text: power laws (Zipf model,…), NPL and word embeddings
    - Audio: sound formation and perception, speech analysis
    - Image: annotation models, review of ML for vision
- Graph-based IR:
    - Web IR models: HITS, PageRank,…
    - Social Network analysis, epidemic models for information propagation
- Target search, Markov Processes and the exploration/exploitation tradeoff

Forme de l'enseignement	Optional courses / Integrated courses and exercises
Documentation	Copy of transparencies and list of reference books
Préalable requis	-
Préparation pour	Algorithmes pour le web
Mode d'évaluation	Oral
Sessions d'examens	J/AS