

Dear TC15 members,

Welcome to the January 2018 edition of our newsletter. First of all, all the members of the governing board of the TC15 wish you a very happy new year and hope for your success, prosperity and good health in the coming times through the new year.

This edition brings to you some open positions in the field of Graph based methods for pattern recognition and updated Calls for Papers are also included below.

Remember that you can also find up-to-date information about our community on our web site (<https://iapr-tc15.greyc.fr/index.php>) or use our rss feed (<https://iapr-tc15.greyc.fr/rss.php>).

Best regards

Jean-Yves Ramel & Donatello Conte
TC15 newsletter editors

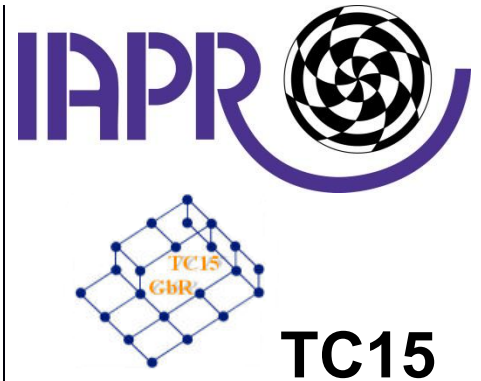


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Open Positions

PhD position Tours (France) Sept 2018: Adaptive and budgeted Graph Mining with Evolutionary algorithms

Supervisors: Nicolas MONMARCHE, Jean-Yves RAMEL

Location: LIFAT – Laboratoire d'Informatique Fondamentale et Appliquée de Tours (EA6300) - Université de Tours - France

Keywords: Graph mining, graph matching, machine learning, pattern recognition, Ant colony, métaheuristics

Description: Graphs can easily describe complex entities or objects. They have the important benefits of unconstrained dimensionality, substructure emergence and interpretability, as opposed to numerical data classically involved in machine learning. These properties are of particular interest for many applications including chemoinformatics, bioinformatics, computer vision, video indexing, text retrieval, social network and Web analysis. However, despite a mature graph theory, graph-based Machine Learning approaches are lagging behind compared to statistical machine learning. Bottlenecks regarding graph learning and error-tolerant graph matching are both theoretical, methodological, and connected with implementation issues since manipulating graphs is known to be computationally very demanding. In this context, the scientific purpose of this collaborative research program is to create a significant breakthrough on three bottlenecks linked with the combination of graph representations and matching (GM) and machine learning (ML). After a study of the recent work done in the 2 domains (algorithms for measuring similarity between graphs on the one hand, and methods of colony-based optimization on the other hand), the following main questions, connected to these hot topics of the moment, will be addressed during the PhD:

- how to combine machine learning methods (Active Learning) and optimization (artificial ants) to produce an adaptive method of similarity computation between graphs and graph-prototype generation;
 - how to optimize these methods by creating "budgeted" or "Anytime" versions in order to make it usable online (in constrained time) on real data (scalability);
 - the evaluation of the proposed methods in the context of real-life applications dealing with structural data (social network analysis, 3D object comparison, bio-informatics, ...)
- Detailed description here

Funding: 3 years grant from the French Ministry of Higher Education and Research. Health insurance is included in the gross salary. Life in Tours (France) is relatively cheap with a one-person flat available starting from 500 euros.

Application details: The candidate should send by e-mail: a motivation letter, a detailed CV the Master thesis abstract, the coordinates (e-mail and tel.) of one or two reference persons.

Contacts: jean-yves.ramel [at] univ-tours.fr – nicolas.monmarche [at] univ-tours.fr

Post-doc position on Graph Kernel for Chemoinformatics in Rouen, France

Graph kernels have already been applied to chemoinformatics and are based on structural information encoded within molecular graphs. However, intrinsic properties of atoms and their interactions induce some electronic properties which are not explicitly encoded within classic molecular graphs representations. The main purpose of this post doctoral position is to include this information into a new augmented kernel and apply it on some chemoinformatics datasets. The two main steps will be i) to define a new molecular representation encoding local electronic information and ii) to define a new similarity measure as a kernel to compare two molecules encoded in the new proposed representation.

This project will be supervised in close collaboration by LITIS (Rouen, France) and GREYC (Caen, France) laboratories which have a strong expertise on graph kernels for chemoinformatics. The chemical part will be supervised by COBRA laboratory (Rouen, France) which has proposed various atomic descriptors encoding some electronic information. Their expertise will be essential to be able to encode additional information into a new representation for chemical compounds.

Salary: This position will be granted with about 2280 euros/month net salary.

Application domains: machine learning on graphs, chemoinformatics, graph kernels, graph representations

Further details:

- Place: The research will be conducted at LITIS Laboratory (Rouen, France) in Normandy. The LITIS (EA 4108) is affiliated to Normandie University, University of Rouen and INSA Rouen Normandie.
- Start date: January/ February 2018
- Duration: 20 months according to discussions with the candidate.
- Topics: Graph kernels, graph representation, machine learning
- Contact: You can contact the team via : postdoc-graphkernel@litislab.fr
- Required skills:
 - PhD or Master in Applied Mathematics or computer science,
 - experience in C++, Python or Matlab programming,
 - knowledge in kernel methods, graph based approach constitutes an advantage.
- Required documents: Please send the following documents:
 - up to date CV,
 - Any recommendation letter
 - A short document on research experience and interests

Post-doctoral position Nancy (France) - GraphScore - Definition and evaluation of graph scores in complex interaction networks

Keywords: Complex interaction networks, Labeled property graph model, scoring methods, prioritization.

Context : Work at the interface between the Centre Hospitalier Regional Universitaire (CHRU) of Nancy and University of Lorraine represented by the computer science laboratory LORIA (<http://www.loria.fr>), in connection with a hospitalo-university research project about Heart Failure (workpackage dedicated to complex networks analysis) and the development at the LORIA of a shared resource platform for « data science for healthcare ».

Job Description: The objective of the project is to define scoring methods applicable to graphs in order to compare them and prioritize the most relevant ones. The main resource at our disposal is a huge graph database representing various types of interactions between various groups of elements : proteins, diseases, drugs, etc. Queries on the main graph database return several subgraphs that need to be ranked according to given priorities. Several graph scoring methods will be defined, combining graph topological properties and any other properties attached to the graph nodes and edges, these latter properties being expressed in controlled vocabularies or ontologies. The scoring methods will be implemented and tested through evaluation studies, based on benchmark datasets. The main application of the project is to identify new biomarkers of given heart-failure mechanisms.

Requirements: PhD thesis in Computer Science or Applied Mathematics dealing with complex graph analysis or mining. Computer Science : relational database (ex : MySQL), graph-oriented databases (ex : Neo4J), knowledge bases, safety of information systems, programming languages (bash, python, R, php, java, others...), knowledge in statistics and in supervised or unsupervised classification/machine learning.

Some experience in working in an inter-disciplinary environment related to health or biology, information retrieval and/or high-performance computing will be appreciated.

Benefits: one year renewable contract starting before march 31st 2018. Gross monthly salary: 2500 to 3000 euros depending on experience and qualifications. Health insurance is included in the gross salary. 45 days vacation per year. There will be substantial financial support for conference travel and international outreach. Life in Nancy (France) is relatively cheap with a one-person flat available starting from 500 euros.

Application details: The candidate should send by e-mail: a motivation letter, a detailed CV the PhD thesis abstract, date of obtention and jury composition, the coordinates (e-mail and tel.) of one or two reference persons to: Marie-Dominique.Devignes@loria.fr before January 31st, 2018 (included).

PhD+PostDoc positions @ PRIP, TU Wien, Austria

PostDoc: The Pattern Recognition and Image Processing Group (PRIP) of the Institute for Computer Graphics and Algorithms at TU Wien invites applications for an assistant position for a doctoral candidate (Univ.Ass. PostDoc). The position is for the duration 5/2018-6/2020 - at the longest till end of maternity leave and is paid (at least) € 50.772,40 per year at 40 hours per week.

PhD: The Pattern Recognition and Image Processing Group (PRIP) of the Institute for Computer Graphics and Algorithms at TU Wien invites applications for an assistant position for a PhD candidate (Univ.Ass. PreDoc). The position is for a duration of four years and is paid according to pay scale B1 at 25 hours per week.

Description: teaching bachelor and master courses; basic and applied research in pattern recognition and image processing with the focus on hierarchical and structural methods and representations; publishing results at high-level workshops, conferences and journals.

German language is an advantage for both positions.

Call for Dataset and Toolkit Submissions

We would like to remind you that the TC15 welcome contributions of new datasets or other resources related to the community. We would like to particularly encourage authors of articles that introduce new datasets, software or other material to submit such material to TC15 for hosting. Please check the TC15 site on information about how to submit datasets for archiving.

Call for papers

First call for papers GbR'2019 : IAPR-TC15 Workshop on Graph-based Representations in Pattern Recognition - June 19, 2019 - June 21, 2019 – Tours City, France

Important dates

- GBR 2019 = 19-21th June 2019
- Regular paper submission: 12th December 2018
- Notification of acceptance: 1st February 2019
- Camera ready due: 15th March 2019
- Early Registration: 15th March 2019

Motivations and topics

GbR is a biennial workshop organized by the 15th Technical Committee of IAPR, aimed at encouraging research works in Pattern Recognition and Image Analysis within the graph theory framework. This workshop series traditionally provides a forum for presenting and discussing research results and applications in the intersection of pattern recognition, image analysis on one side and graph theory on the other side. In addition, given the avenue of new structural/graphical models and structural criteria for solving computer vision problems, this edition encourages researchers in this more general context to actively participate in the workshop.

The 12th edition of GbR will be held in Tours, France in June 2019. Tours city is the capital of the Loire Valley (UNESCO World Heritage site) also known as "the garden of France".

The scope of GbR2019 includes, but is not limited to, the following topics:

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| Graph matching | Kernel methods for graphs |
| Graph-based image segmentation | Graph embeddings |
| Deep Learning on graphs | Irregular (graph) pyramids |
| Graph representation of shapes | Belief-propagation methods |
| Graph-based learning and clustering | Graph-cuts methods |
| Data mining with graphs | Graphs in computational topology and bioinformatics |
| Graph distance and similarity measures | Graphs in social network analysis |

Workshop Chairs

Donatello Conte (Université de Tours)
 Jean-Yves Ramel (Université de Tours)
 Pasquale Foggia (University of Salerno)



S+SSPR 2018 : IAPR Joint International Workshops on Statistical Techniques in Pattern Recognition (SPR 2018) and Structural and Syntactic Pattern Recognition (SSPR2018) - Aug 17, 2018 - Aug 19, 2018 - Fragrance Hill, Beijing

- Important dates*
- Submission Deadline 15th April, 2018
 - Author Notification 15th May, 2018
 - Camera-ready Submission 1st June, 2018
 - Workshops Dates 17th-19th August, 2018

Motivations and topics

S+SSPR 2018 is a joint biannual event organized by Technical Committee 1 (Statistical Pattern Recognition Technique) and Technical Committee 2 (Structural and Syntactical Pattern Recognition) of the International Association of Pattern Recognition (IAPR). Following the trend of previous editions, S+SSPR 2018 will be held in close proximity and shortly before the International Conference on Pattern Recognition (ICPR). This time the workshops will be hosted by Beihang University. Authors are invited to submit papers addressing any topic in statistical, structural or syntactic pattern recognition and their applications. Possible topics of interest include,

<p>SPR Topics</p> <p>Classification; Prediction Gaussian Processes; Randomized Algorithms Multiple Classifiers; Ensemble Methods Model Selection; Feature Selection Dimensionality Reduction Dissimilarity Representations Metric Learning; Representation Learning Multiple Instance Learning Clustering Semi-Supervised Learning; Weakly-supervised Learning Active Learning; Novelty Detection Deep Learning; Neural Networks Adversarial Learning; Reinforcement Learning Transfer Learning; Domain Adaptation Data Complexity; Data Modeling Security of Machine Learning</p>	<p>SSPR Topics</p> <p>Structural Matching Structural Complexity Syntactic Pattern Recognition Graph-theoretic Methods Graphical Models Structural Kernels Spectral Methods Spatio-Temporal Pattern Recognition Structured Text Analysis Stochastic Structural Models Intelligent Sensing Systems Multimedia Analysis Multimedia Retrieval Image Document Analysis Image Understanding Shape Analysis</p>
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Workshop Chairs

Honorary Chair: Edwin Hancock, University of York, UK
 General Chair: Xiao Bai, Beihang University, China
 Program Chairs: Antonio Robles-Kelly, Data61-CSIRO, Australia - Battista Biggio, University of Cagliari, Italy
 SPR Chair: Tin Kam Ho, IBM Watson, USA
 SSPR Chair: Richard Wilson, University of York, UK