The 29th International Conference on Software Engineering and Knowledge Engineering (SEKE), 2017.


Lunch cost at Inria canteen is about 3 €

Help for the resident card procedure and for husband/wife visa

Help for accommodations

Help and benefits:

- Medical insurance is included.
- Starting date: between Oct. 1st 2019 and Jan. 1st 2020
- Salary: 1 982 euros gross monthly (about 1 676 euros net).
- Duration: 3 years
- Advantages:
  - to apply the approach to the prediction of the drug-target associations.
  - to propose link prediction approaches in knowledge graphs based on both graph topology and neighborhood constraints to be defined;
  - to design scalable implementations of the proposed approaches for distributed architectures.
  - to define evaluation and validation protocols for the proposed algorithms in the context of web-scale knowledge graphs;
  - to apply the approach to the prediction of the drug-target associations.

This project will be carried out mainly within the Capsid team at INRIA Nancy which combines expertise in knowledge graphs; distributed graph computing [6] and drug-target interactions (https://capsid.loria.fr). Achieving the objectives of the thesis will involve acquiring knowledge and understanding of the current state of the art in link prediction in large and complex graphs. An important aspect of this project will be to explore the use of big graph processing frameworks in order to design scalable implementations of proposed link prediction methods in knowledge graphs. The proposed techniques will be implemented on a local cluster and evaluated using publicly available data. This project will develop novel and practical link prediction algorithms that will be applied to predict drug targets. This will help to satisfy an important and current research need in drug repositioning. The developed software will be made publicly available.

Required qualification:
Candidates must have a master degree in computer science, mathematics, or one of the physical sciences. Good programming skills in an object-oriented programming language such as JAVA or C++ are essential. Experience of NoSQL solutions (Neo4j, Titan, MongoDB), parallel/distributed programming (Spark, Hadoop, Flink) and graph processing frameworks (Pregel, GraphLab, GraphX) is also desirable but not essential. A strong interest in structural biology would also be highly desirable.

Advantages:
- Duration: 3 years
- Starting date: between Oct. 1st 2019 and Jan. 1st 2020: Salary: 1 982 euros gross monthly (about 1 583 euros net) during the first and the second years. 2 085 euros the last year (about 1 676 euros net).
- Medical insurance is included.

Help and benefits:
- Possibility of free French courses
- Help for accommodations
- Help for the resident card procedure and for husband/wife visa
- Lunch cost at Inria canteen is about 3 €

References:
Principales activités

Tâches de thèse :
- Étudier les algorithmes de prédiction des liens dans les graphes homogènes
- Étendre l'approche aux graphes de connaissances (par conséquent, avec des propriétés de nœud et d'arête)
- Évaluer sur des données RDF bien connues
- Appliquer à des graphes de connaissances biologiques décrivant les interactions de médicaments avec des cibles

Compétences

Les candidats doivent avoir un master en informatique, mathématiques ou une des sciences physiques. Les compétences fondamentales en programmation orientée objet (Java ou C++, par exemple) sont essentielles. L'expérience avec des solutions NoSQL (Neo4j, Titan, MongoDB), le parallelisme/distribué (Spark, Hadoop, Flink) et les frameworks de traitement de graphes (Pregel, GraphLab, GraphX) est également souhaitable mais non essentielle. Un intérêt marqué pour la biologie structurale serait également fortement souhaitable.

Rémunération

Salaires : 1982€ bruts par mois pour la première année, 2085€ bruts par mois pour la deuxième année, et 2188€ bruts par mois pour la troisième année. Les salaires après impôts : environ 1596,05€ par mois pour la première année, 1678,99€ par mois pour la deuxième année et 1761,93€ par mois pour la troisième année (assurance médicale incluse).