Scuola di Dottorato in ICT
Doctoral School in ICT

Research project for a PhD curriculum in ICT – Computer Engineering and Science

Tutor: Federica Mandreoli
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(**) Foreign Co-tutor: Dott. George H. Fletcher TU/e, Eindhoven, the Netherland

Proposed Title of the research:
Mapping discovery in graph dataspaces.

Keywords: (3)
Mapping discovery, structural characterization, dataspaces

Research objectives: --(max 10 rows)
The main aim of the project is to study solutions for the discovery of mappings in graph dataspaces. Dataspaces is a data management abstraction for scenarios such as large science-related collaborations or search for structured content on the WWW where data sources are loosely connected. The data model is a triple-based model where there is no notion of global or local schema so users in their queries can ask for statement patterns that are not explicitly in the dataspace. The basic setting is that of a finite set of data sources, a finite set of mappings between the data sources, and a query posed on a data source. According to the pay-as-you-go approach, "mapping discovery" becomes necessary when it is not possible to satisfactorily answer the query given the available mappings.
Therefore, the main aim of this research project is to find an answer to the following question: How do we find appropriate mapping sets to resolve the missing relationships in a given query, using minimal user input/feedback?

Proposed research activity --(max 10 rows)
The research activity will be articulated as follows:

- Study of dataspaces, mapping languages, structural characterization
- Study of a theory for query-driven example based mapping discovery
- Study of algorithms for mapping discovery
- Development of platform for mapping discovery
- Evaluation of the proposed solutions on real scenarios

The PhD student will attend the courses provided by the PhD school and by summer schools specifically focusing on graph databases and data integration.

Supporting research projects (and Department)
FIM Department (Dipartimento di Scienze Fisiche Informatiche e Matematiche)

Possible connections with research groups, companies, universities..
This research project is in collaboration with Dr. George H. L. Fletcher, member of the Web Engineering Group, TU/e.
We foresee possible collaboration with Prof. Angela Bonifati, member of the CRIStAL group, Lille 1 University.
Possible interested companies are TuoTempo Srl and lumos!medica.

(*) optional
(**) optional/ to be completed on the second year