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- *Prof. Stefano Ceri*

Search Computing

Search computing is a new multi-disciplinary science which provides the abstractions, foundations, methods, and tools required to answer compex queries, such as "Who are the

strongest European competitors on software ideas? Who is the best doctor to cure insomnia in a nearby hospital? Where can I attend an interesting conference in my field close to a sunny beach?" This information is available on the Web, but no software system can accept such queries nor compute the answer. Search computing is an evolution of service computing where ranking is the dominant factor for composing services. While state-of-art search systems answer generic or domain-specific queries, search computing enables answering multi-domain queries via a constellation of dynamically selected, cooperating search services.

CrowdSearch: Using the Crowds for Improving Search Experiences

While Web search is concerned with locating information from content

on the Web, crowdsearch denotes information extraction directly from online humans. CrowdSearch uses the crowds as sources for the content processing and information seeking processes; it fills the gap between generalized search systems, which operate upon world-wide information - including facts and recommendations as crawled and indexed by computerized systems – and social systems, capable of interacting with real people,

in real time. Crowdsearch is part of the more general trend towards crowdsourcing, which is emerging as a general paradigm of organizing the human working and leisure activities by means of computerized platforms. Industry is heavily moving toward crowdsourcing, as demonstrated by the high number of new start-ups that exploit social networking, social

participation, humans as sensors, application gamification, and other variants of this trend.

- ***Dr. Serge Abiteboul***

Data sciences: from First-order logic to the Web

Information technology has revolutionized our lives. Computers are traditionally seen as computing machines, although their main purpose is now to manage information. We will cover important aspects of data management, including relationships with mathematical logic and complexity theory. We will discuss the Web that can be seen as a huge distributed database. We will mention challenges: the extraction of global knowledge from the masses of available information and distributed reasoning in the semantic Web.

"Viewing the Web as a Distributed Knowledge Base"

Information of interest may be found on the Web in a variety of forms, in many systems, and with different access protocols. A typical user may have information on many devices (smartphone, laptop, TV box, etc.), many systems (mailers, blogs, Web sites, etc.), many social networks (Facebook, Picasa, etc.). This same user may have access to more information from family, friends, associations, companies, and organizations. Today, the control and management of the diversity of data and tasks in this setting are beyond the skills of casual users. Facing similar issues, companies see the cost of managing and integrating information skyrocketing.

We are interested here in the management of such data. Our focus is not on harvesting all the data of a particular user or a group of users and then managing it in a centralized manner. Instead, we are concerned with the management of Web data in place in a distributed manner, with a possibly large number of autonomous, heterogeneous systems collaborating to support certain tasks.

Our thesis is that managing the richness and diversity of user-centric data residing on the Web can be tamed using a holistic approach based on a distributed knowledge base. All Web informations are represented as logical facts, and Web data management tasks as logical rules. We discuss Webdamlog, a variant of datalog for distributed data management that we use for this purpose. The automatic reasoning provided by its inference engine, operating over the Web knowledge base, greatly benefits a variety of complex data management tasks that currently require intense work and deep expertise.

This work is part of the Webdam European project.

- ***Prof. Dr. Martin Kersten***

“Arrays in database systems, the next frontier?”

Scientific applications are still poorly served by contemporary relational database systems. At best, the system provides a bridge towards an external library using user-defined functions, explicit import/export facilities or linked-in Java/C# interpreters. Time has come to rectify this with SciQL, a SQL-query language for science applications with arrays as first class citizens.

In this talk I outline the language features using examples from seismology, astronomy and remote sensing. It demonstrates that a symbiosis of the relational and array paradigm is feasible and highly effective to cope with the data intensive research challenges encountered in science.

Subsequently, its ongoing implementation on top of MonetDB is described at some length, providing a vista on the many novel database research issues emerging.

- ***Pekka Aakko***

“Applifier - social game discovery with 150 million users”

Applifier is the company that transformed globally how new games in social networks and mobile are discovered via cross promotion. Applifier's fast growth into leading cross promotion service on Facebook has had multiple challenges: the company has grown into servicing over 150 million gamers each month and the amount of data collected from users looking for new games is huge. The presentation will touch the data collection and refining, trends in the social gaming industry in general and how the company actually pivoted from a failed social gaming startup.

- ***Dr RobertoSaracco***

We are witnessing an incredible evolution in most branches of science. ICT is both evolving and fostering the evolution of many other sectors. Most of the time we miss the forest by focussing on the trees.
In this opening talk the goal is to take a glance at some of the trees, be it bio-tech, smart materials, communications, neurophysiology of perception and a few more and get to know the whole forest. discovering on the way the impact of technology evolution on economy, and viceversa the impact that price decrease has in stimulating the market and in turn steering technology evolution.
We will consider the impact of lowering transaction cost: new game play-field and new rules in existing play-field, a shift from product to services, the embedding of awareness and communications, the fading boundaries among atoms and bits. All of these provide the keys to entrepreneurship.

The talk aims at stimulating divergent thinking and to apply it to consolidated reality. As a matter of fact, nothing is more brittle than what is consolidated by time, once technology changes the rules of the game.

- ***Dr. Ioana Manolescu***

“From semi-structured data to the Semantic Web: a database perspective”

The future in IT is certainly circumscribed by more communications, more data, and more computation.
In this talk, I will attempt to highlight a "golden thread" of concepts and algorithms that the data management research community takes pride in. These models mostly revolve around the notion of semi-structured data, that is, data part of which may seriously or completely lack structure (and typically also lacks schemas, in the traditional sense), while other fragments may be fairly regular. The talk will follow the concepts of querying, indexing, and restructuring such data, highlighting the main models and techniques. I will close with a presentation of some recent works within the team, where we apply semi-structured database-inspired techniques to the problems raised by Semantic Web databases.