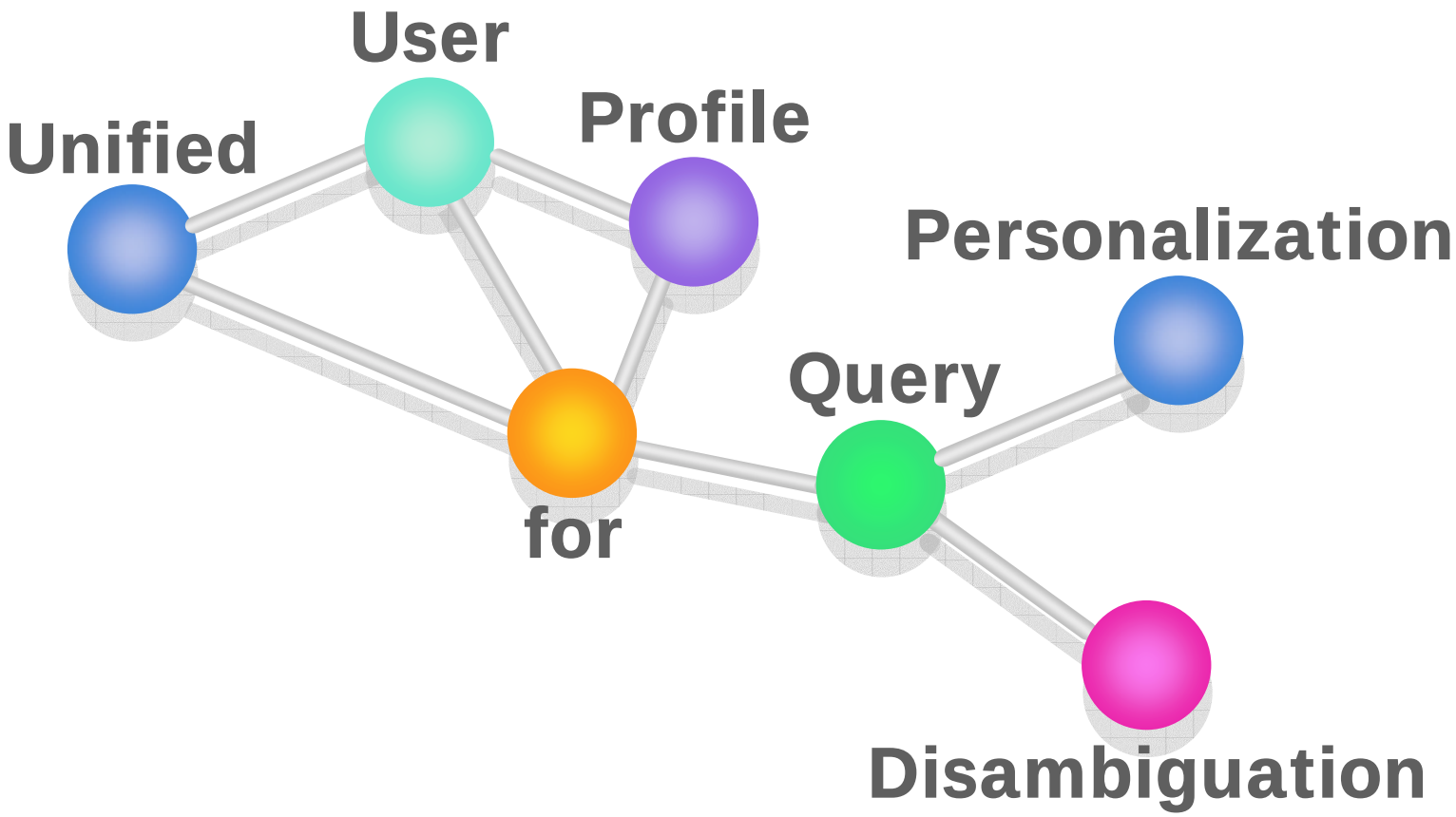
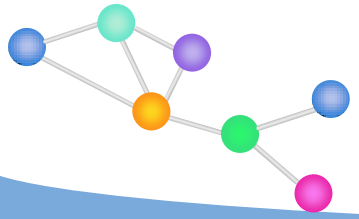



1st Int'l Workshop on Personalized Information Access, Edinburgh, UK, 24-25 July 2005

Georgia Koutrika, Yannis Ioannidis

University of Athens, Greece



# Overview

- Introduction
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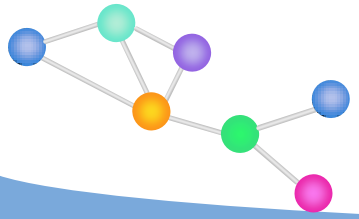
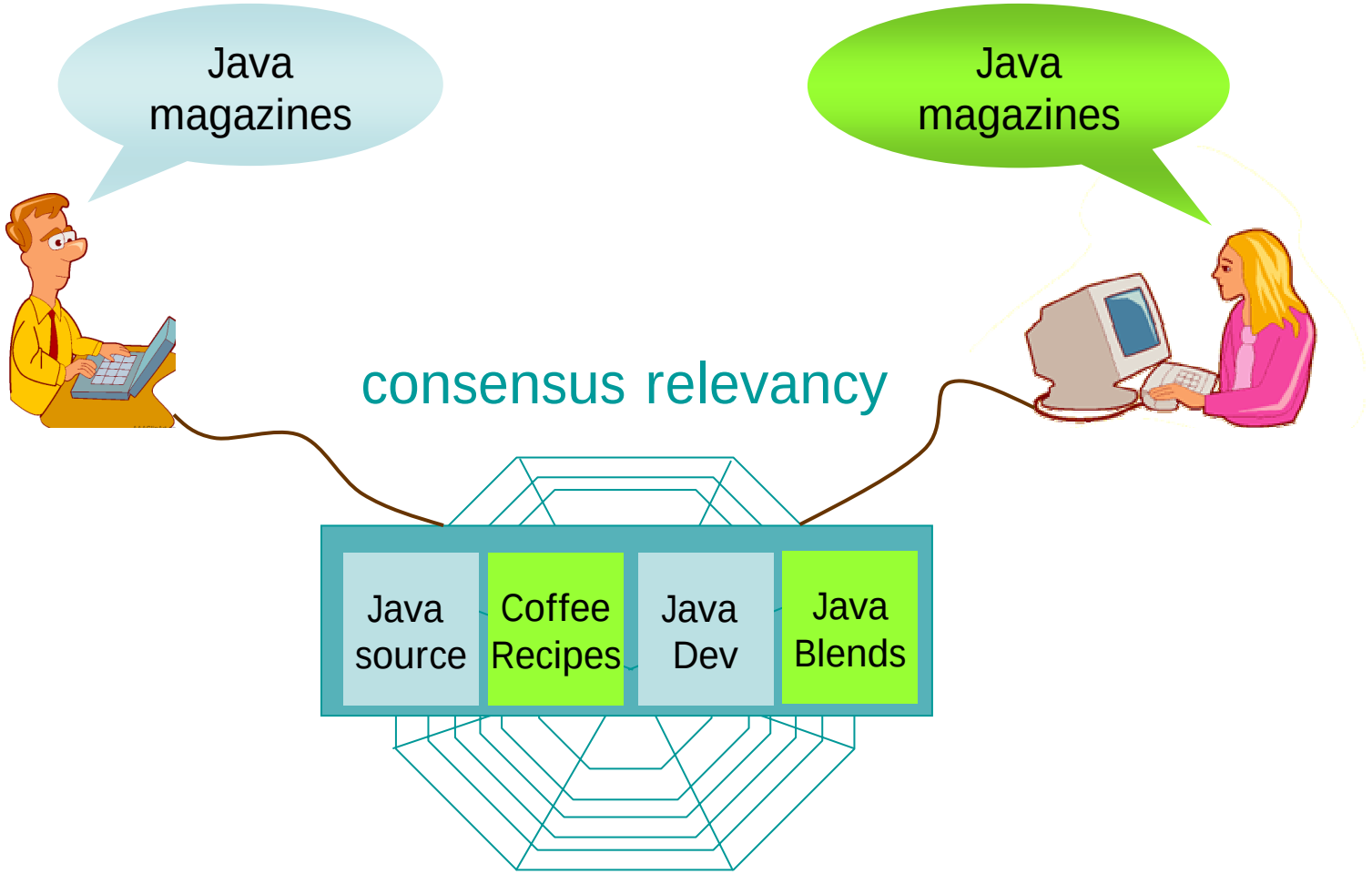


# Introduction

Search engines are “deterministic”



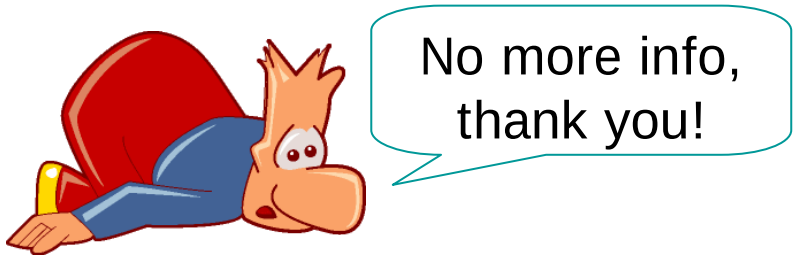
# Introduction

## Problems in web searches

- Query ambiguity

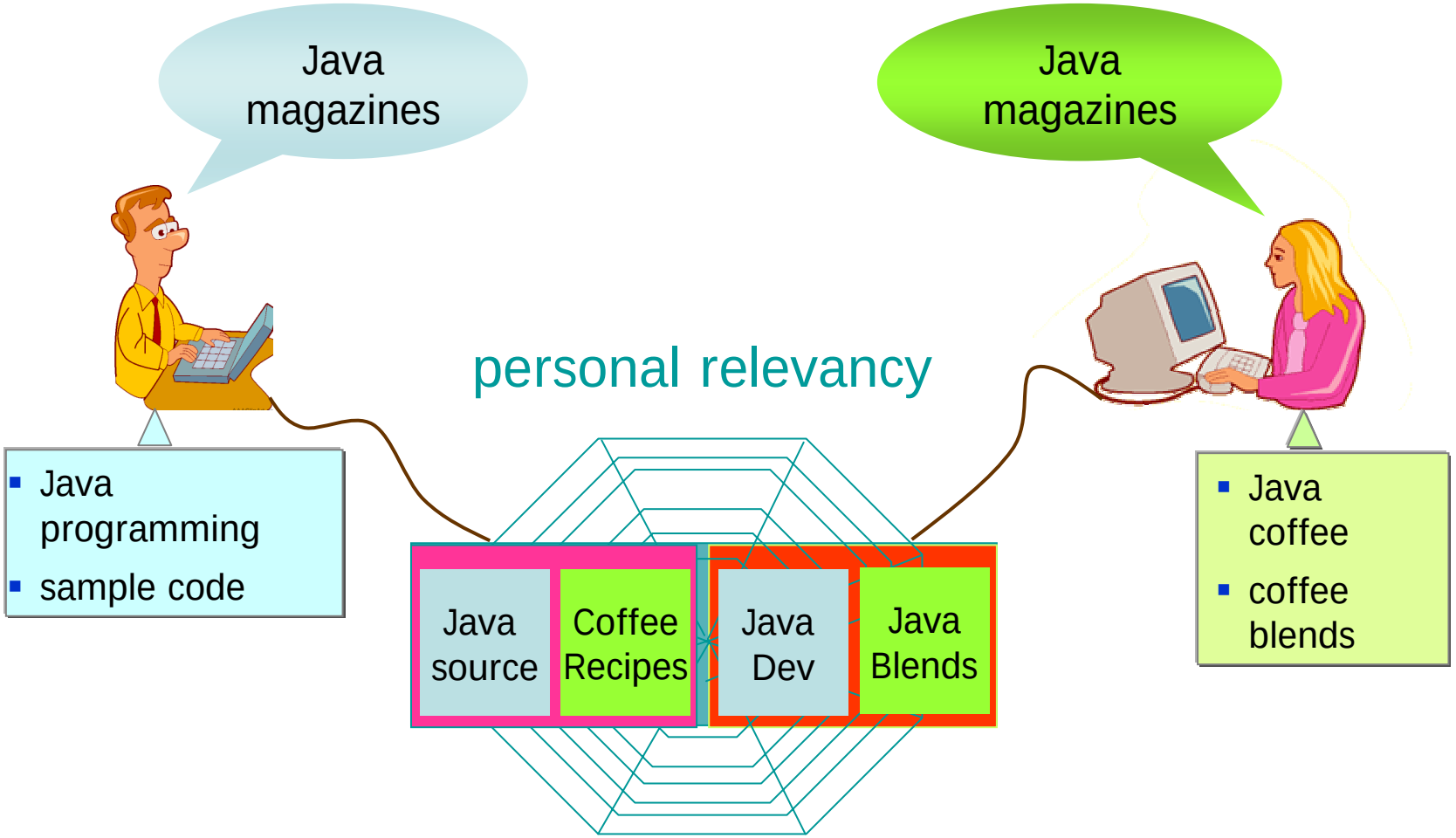
Java is coffee or programming language ?

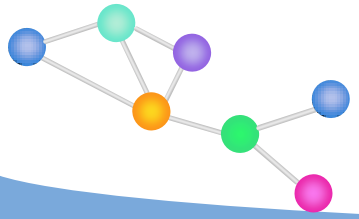
- Abundance of web information



# Introduction

Search engines should be more “user-centered”





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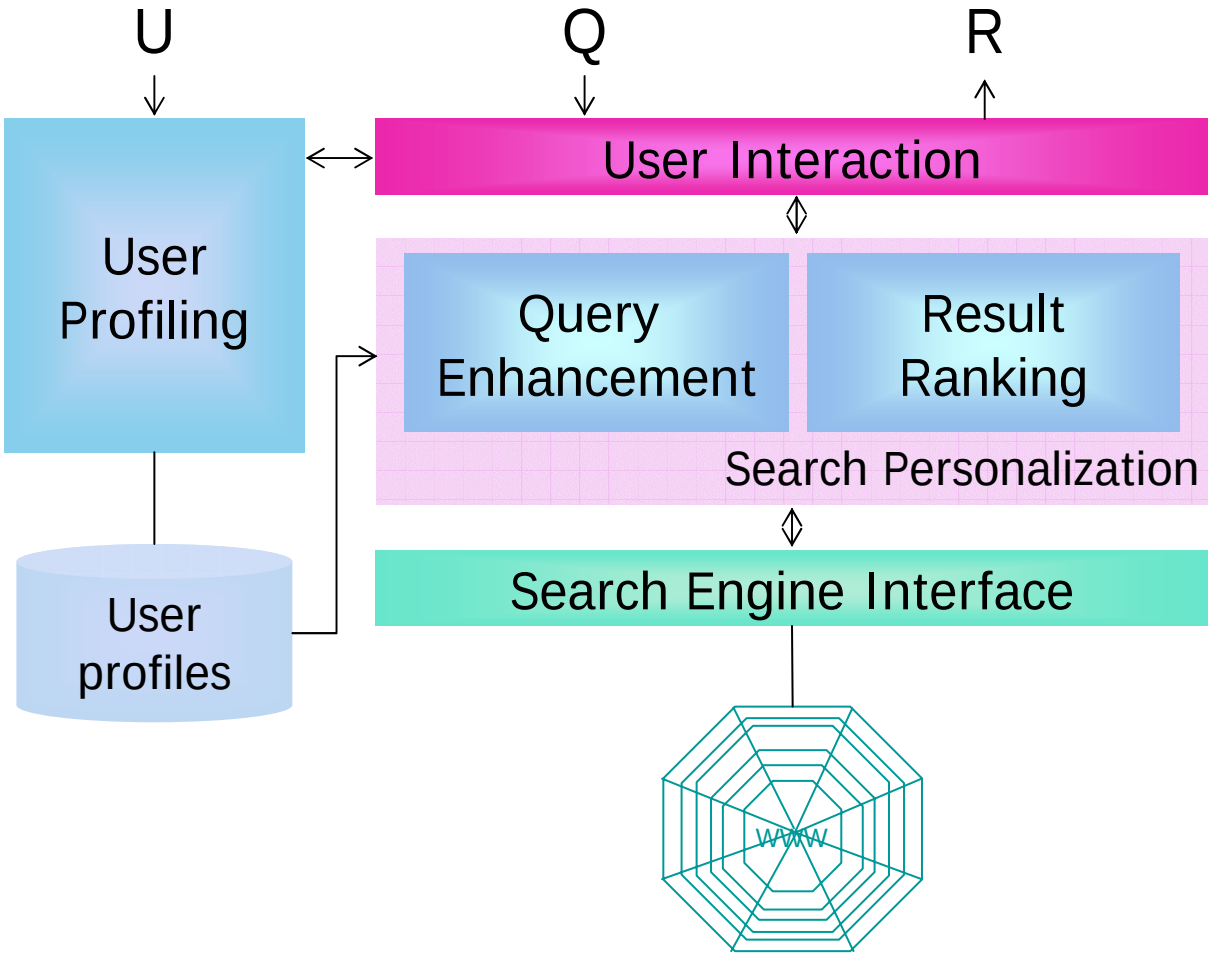
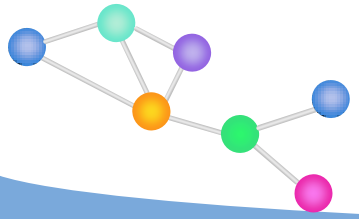
# Personalized Search Architecture





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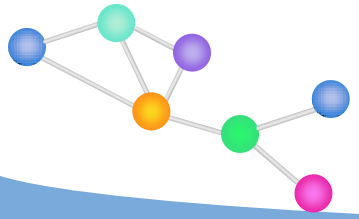


# User Profile

## Queries

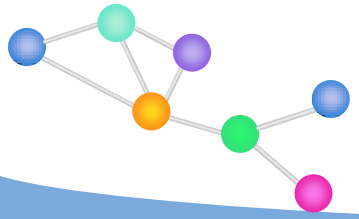
$term_1$, ... $term_N$

## Logical operators

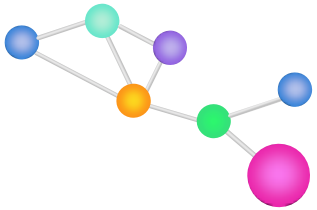
AND, OR, NOT

## Example

Java books



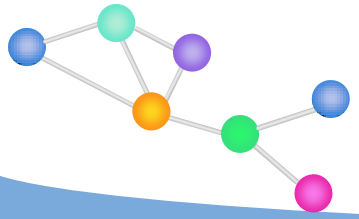
# User Profile



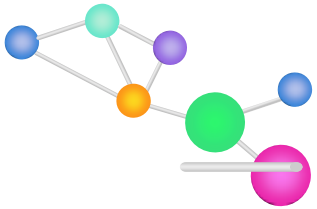
User profile is a graph

Nodes

<terms, $w_t$> where $w_t \in [0, 1]$



# User Profile



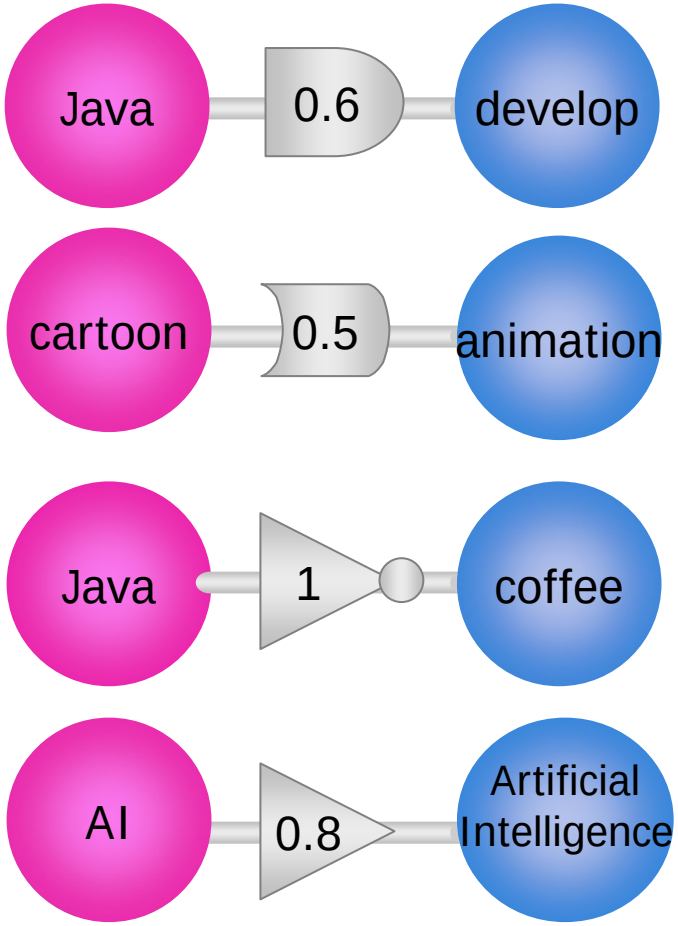
User profile is a graph

Directed Edges

<possible rewriting, $w_r$> where $w_r \in [0, 1]$

# User Profile

## Directed Edges




conjunction edge

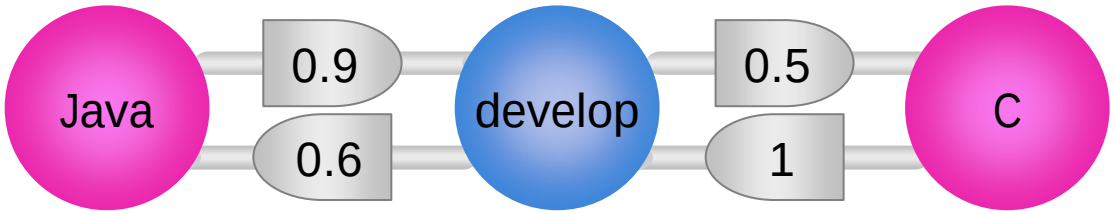
disjunction edge

negation edge

substitution edge

# User Profile

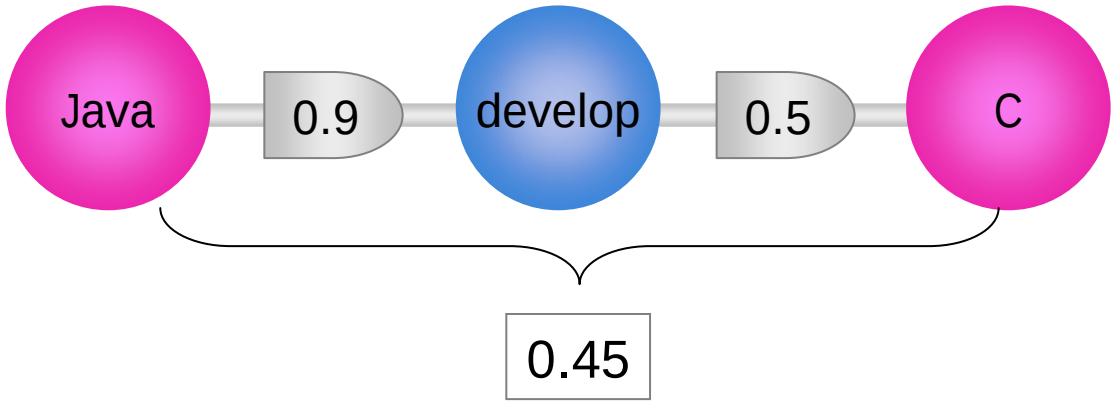
## Directed Edges

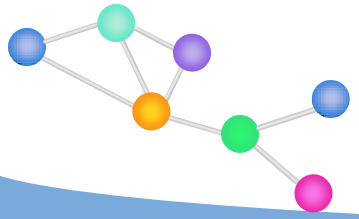


# User Profile

## Transitive term rewriting

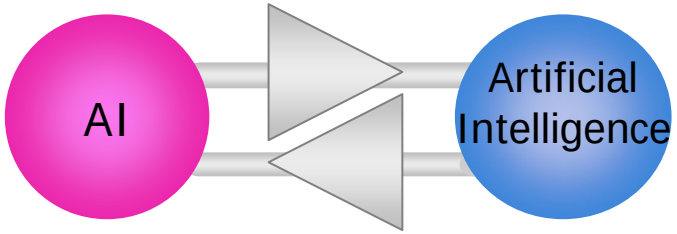
$$f_T(D_N) \leq \min(D_N)$$





# User Profile

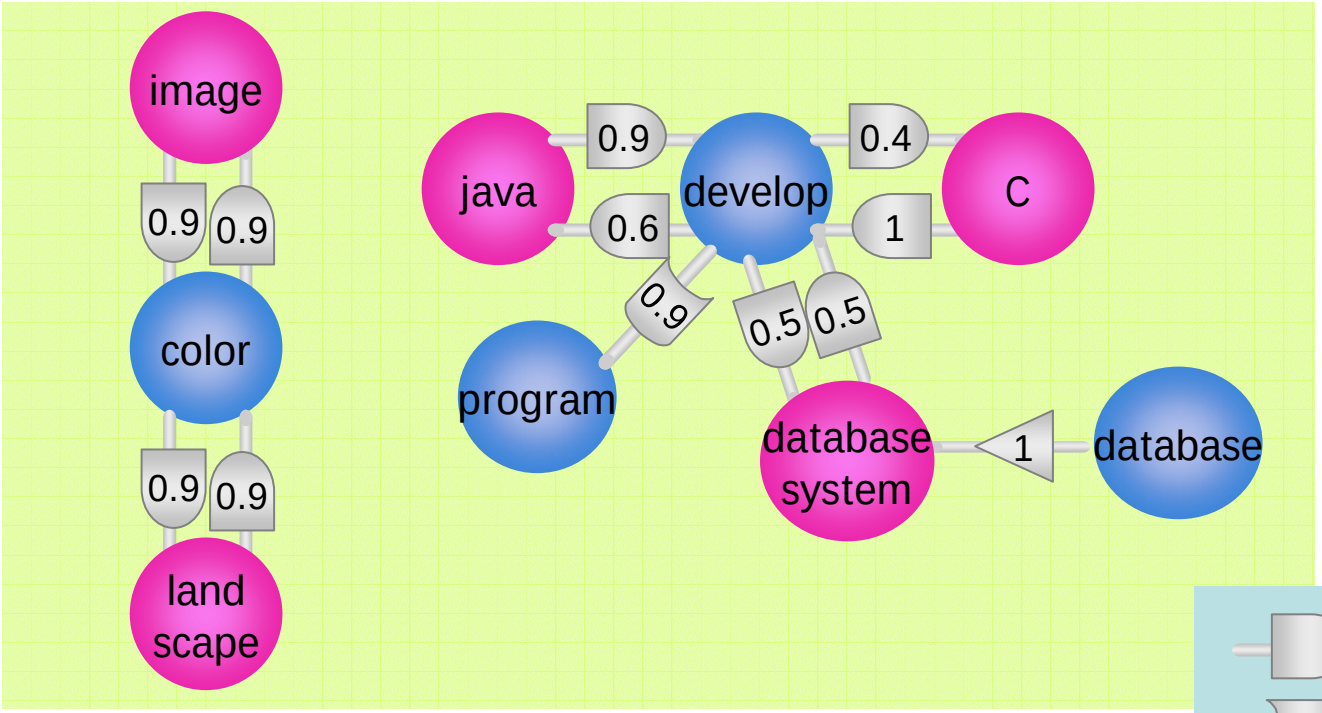
Not all graphs are valid profiles!




substitution edge

# User Profile

## Example profile

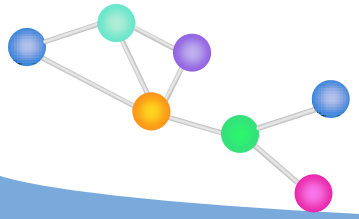



conjunction edge

disjunction edge

negation edge

substitution edge



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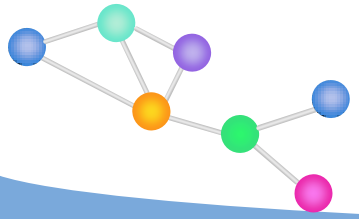


# Query Personalization

Given a query Q, a user profile U, context CXT,

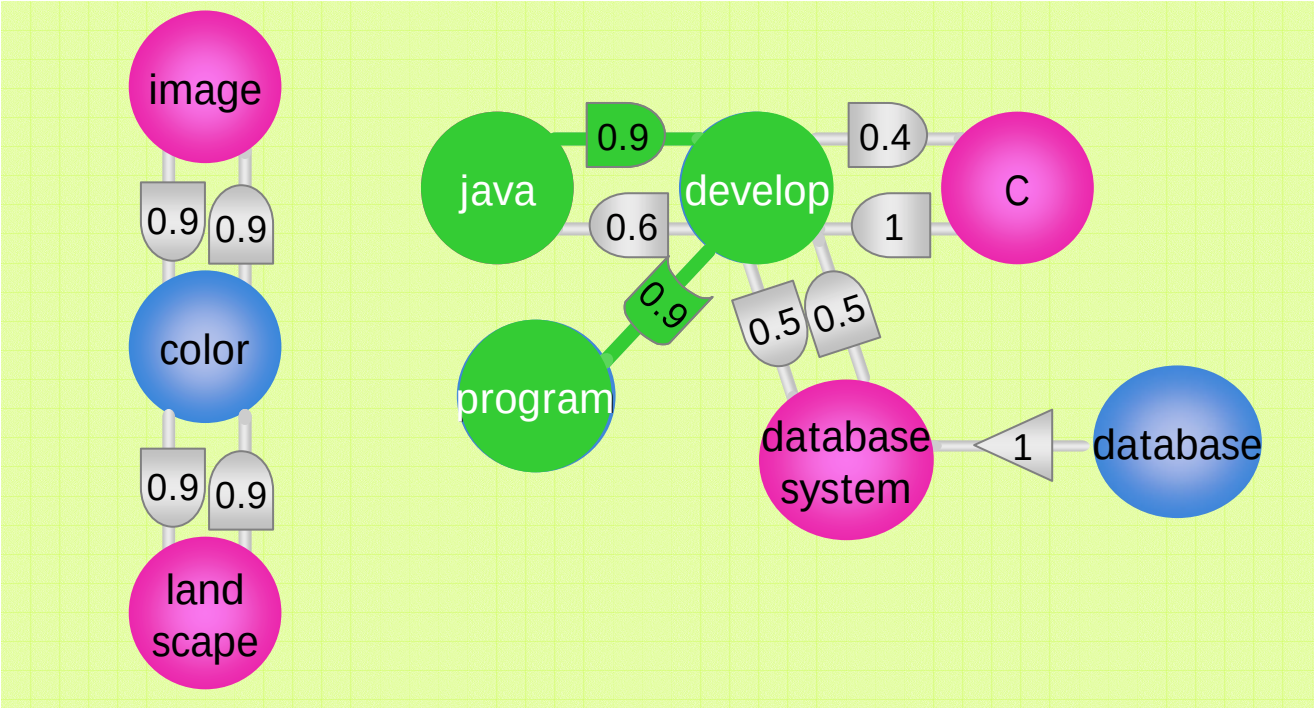
disambiguation and personalization :

a unified query modification process

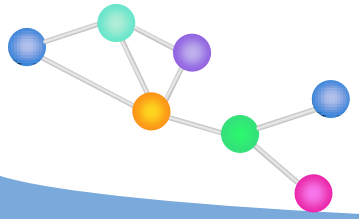
# Query Personalization

Q: java tutorials

CXT: w > 0.8



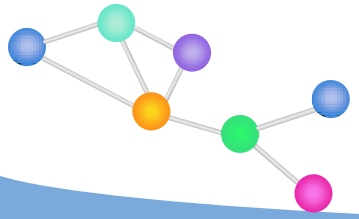

Q': java (develop or program) tutorials



# Query Personalization

## Experiments

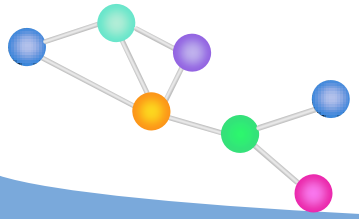
- Search interface: Google Web API service
- User profiling



# Query Personalization

## Experiments

- 10 users
- 5 search tasks
- Two phases
- Gain in time: 29%
- Increase of top relevant results: up to 50%



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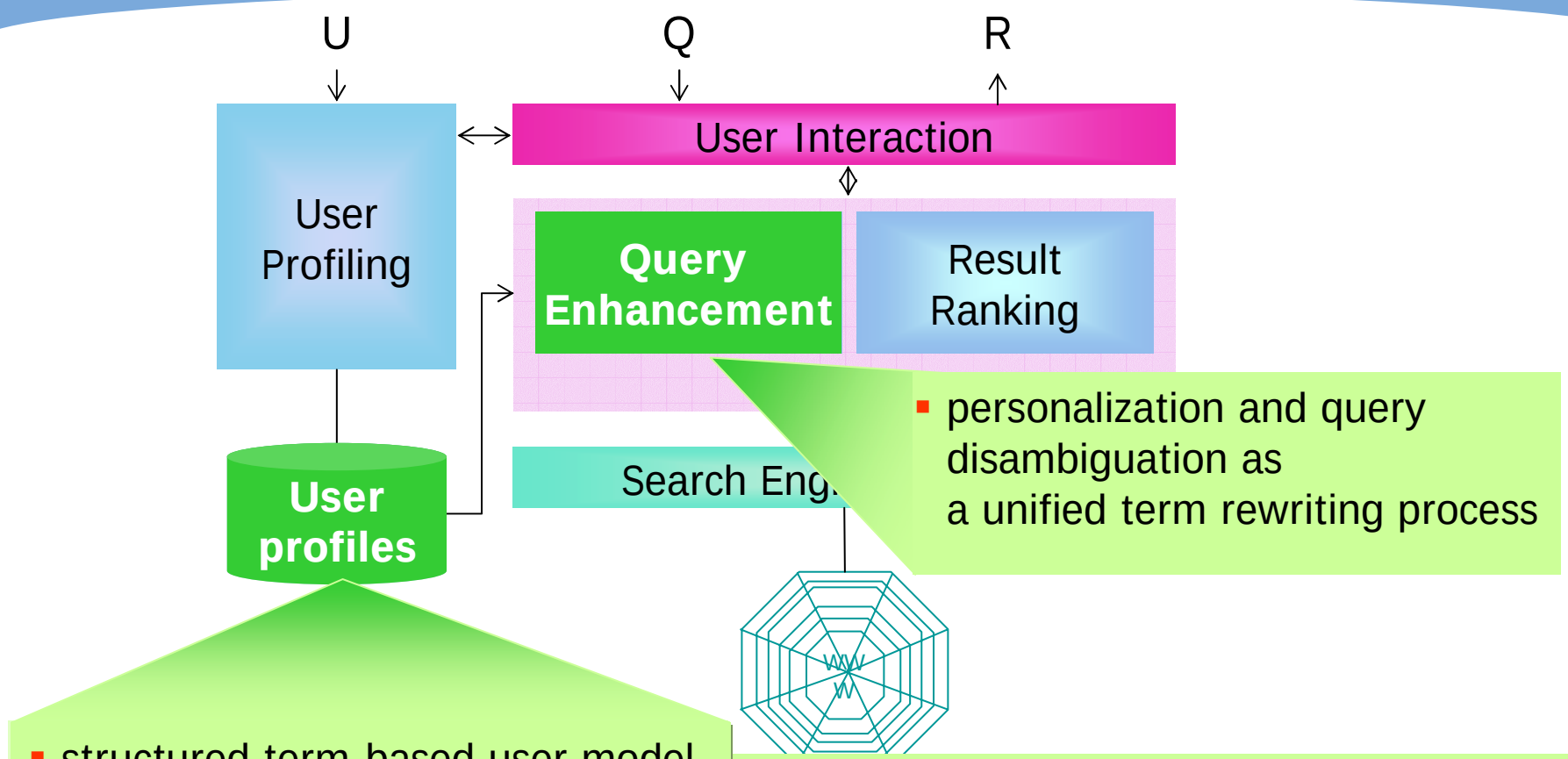
# Conclusions



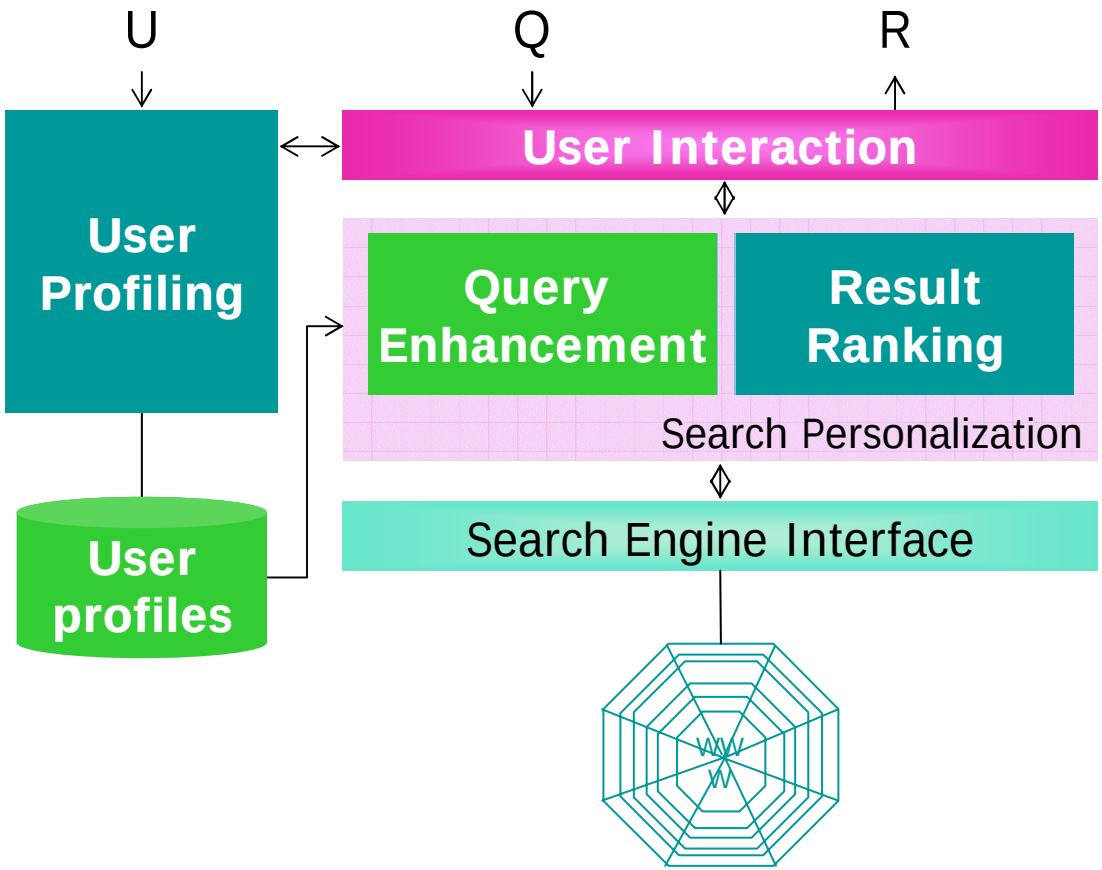

- personalization and query disambiguation as a unified term rewriting process

- structured term-based user model for unstructured data
- connections between terms express possible rewritings
- generic

Our framework is

- independent of the underlying search engine
- independent of the profiling method

# Future Work


U
Q
R
User Profiling
User Interaction
Query Enhancement
Result Ranking
Search Personalization
User profiles
Search Engine Interface
WWW

# The End