

Human-machine Collaboration for Enriching Semantic Wikis using Formal Concept Analysis

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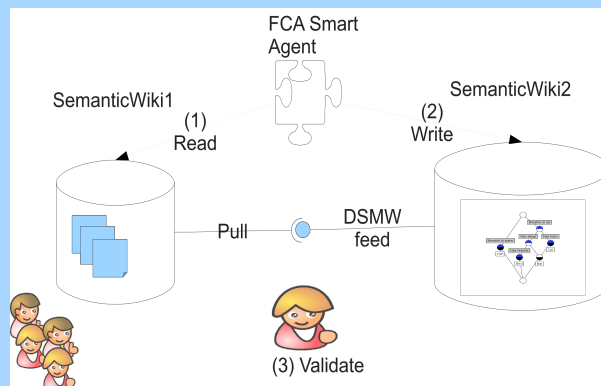


1 Abstract

Semantic wikis allow users to build knowledge understandable by humans and computers. They also allow machines to produce or update semantic wiki pages as humans can do. This opens the opportunity to consider machines as new member of communities to produce and maintain knowledge. "Smart agents" can reduce the overhead of communities in the process of continuously knowledge building and correct humans errors. A smart agent can compute automatically category trees based on defined semantic properties. A FCA smart agent leverages humans from these tasks. In order to reduce human-machine collaboration problems, humans just validate changes proposed by the FCA smart agent.

2 Human-machine Collaboration

The FCA smart agent reads the semantic wiki pages and proposes a new categorization based on FCA in another semantic wiki. Users modify and when they agree, they synchronize the original wiki with the proposed classification thanks to DSMW extension.



3 FCA Processing

The FCA smart agent builds the table below by requesting the original semantic wiki. Next, it builds the FCA lattice and maps it on Semantic wikis categories.

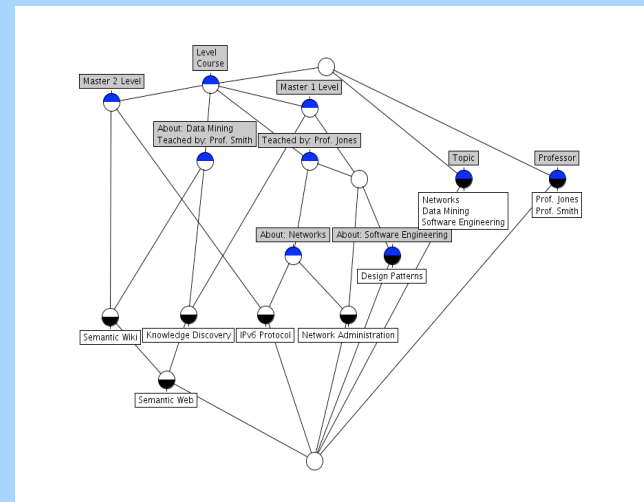
	Professor	Topic	Course	Level	Master 1 Level	Master 2 Level	Teached by:Prof. Smith	Teached by:Prof. Jones	About:Data Mining	About:Software Engineering	About:Networks
Prof. Smith	x										
Prof. Jones	x										
Data Mining		x									
Networks		x									
Software Engineering		x									
Knowledge Discovery			x	x	x		x		x		
Semantic Web			x	x		x	x		x		
Semantic Wiki			x	x	x	x	x		x		
Design Patterns			x	x	x			x		x	
IPv6 Protocol			x	x		x		x			x
Network Administration			x	x	x			x			x

Each category matches one (and only one) concept. Each concept matches zero, one or several categories.

- If a concept matches one and only one category, this category will simply be preserved in the enriched wiki.
- If a concept matches two categories or more, a new category is created.
- If a concept matches no category, a new one is created, with a default title.

4 Category Enrichment

The new categories are enriched with new text content, based on properties. Sentences like "The pages belonging to this category seems to have relation \$T\$ with the page \$P\$." would be appended in the page.



6 Conclusions

Semantic wikis allow users to build knowledge understandable by humans and computers. They also allow machines to produce or update semantic wiki pages as humans can do. This opens the opportunity to consider machines as new member of communities to produce and maintain knowledge. Consequently, such "smart agents" can reduce significantly the overhead of communities in the process of continuously knowledge building and correct humans errors.