FCAView Protege Tab Plug-in

FCAView Protégé Tab Plug-in

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Introduction

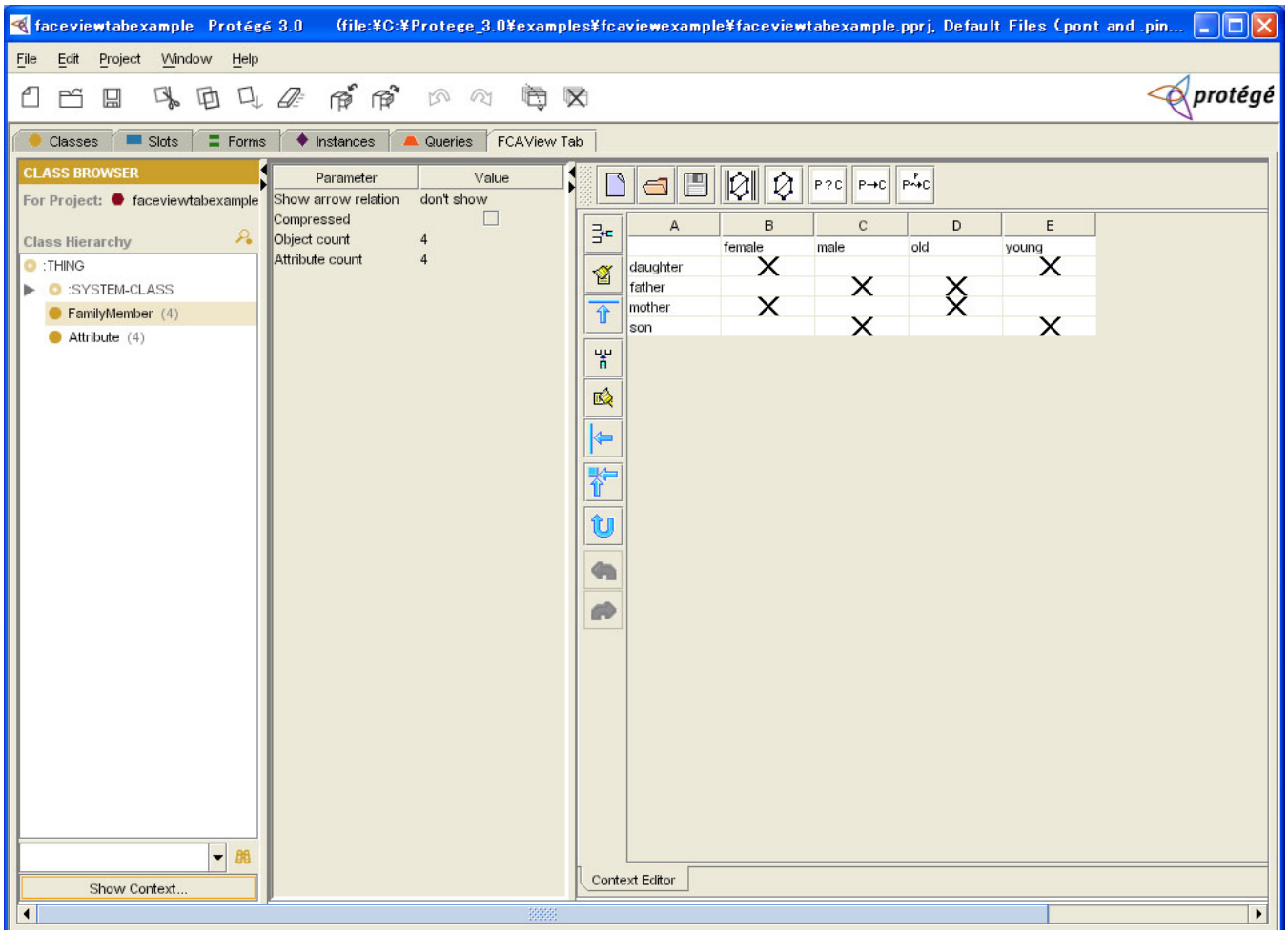
FCAView Tab plug-in provides Protégé users a novel way to visualize their ontologies using the formal concept analysis (FCA) technique.

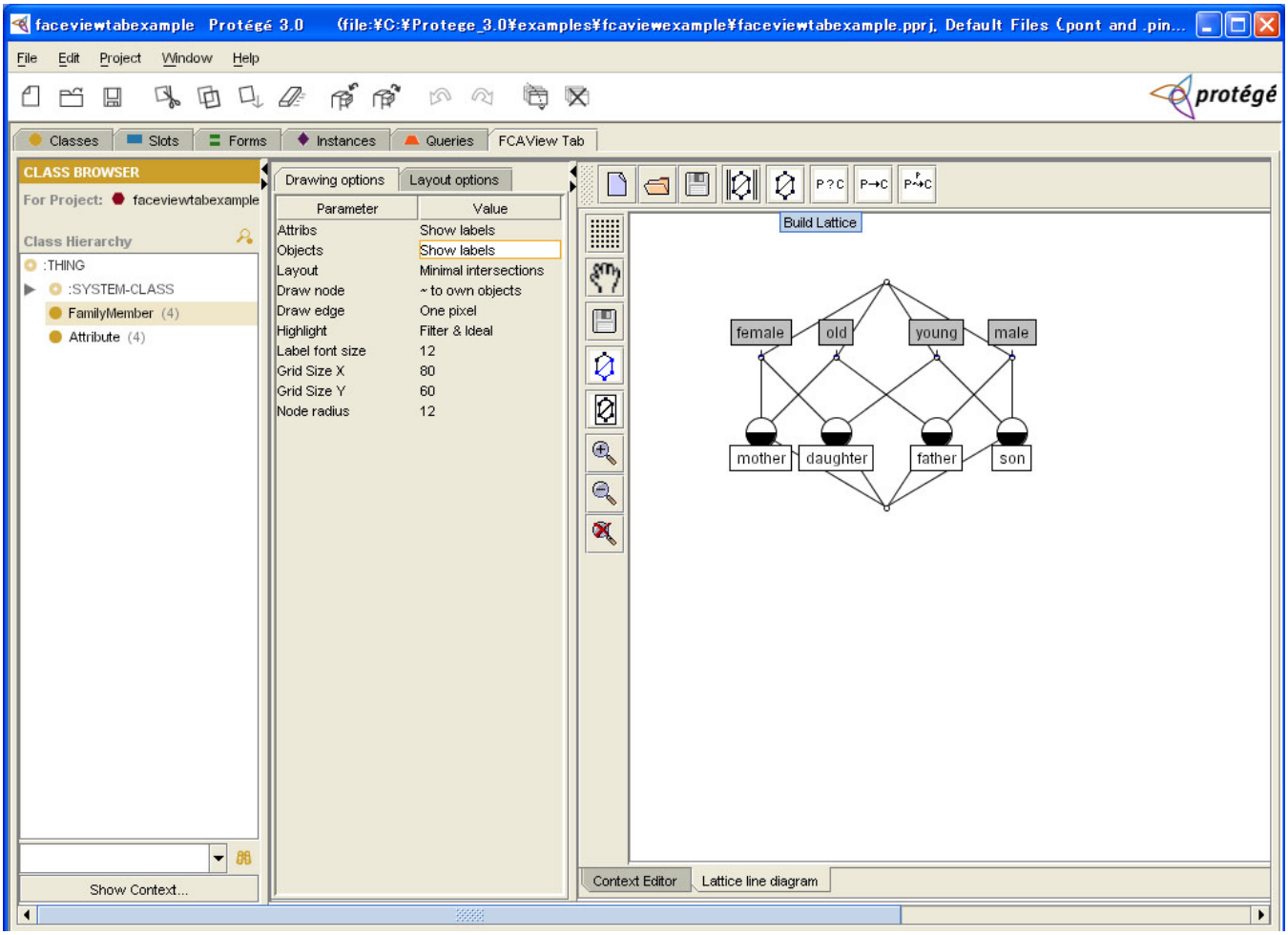
FCA, a mathematical approach to data analysis based on lattice theory, has been advocated to support ontology building in several studies. Generally speaking, there are three elements to form a formal context: a set of formal objects, a set of formal attributes and the binary relations between them. The formal context is usually formed using a cross table, and graphically it also can be visualized using a lattice diagram. The two ways contain the same information about the formal context.

In the FCAView Tab, we hooked the protégé-2000 with an open source software Concept Explorer version 1.2. We developed two versions of visualization tools as follows.

FCAView Tab for core Protégé ontology

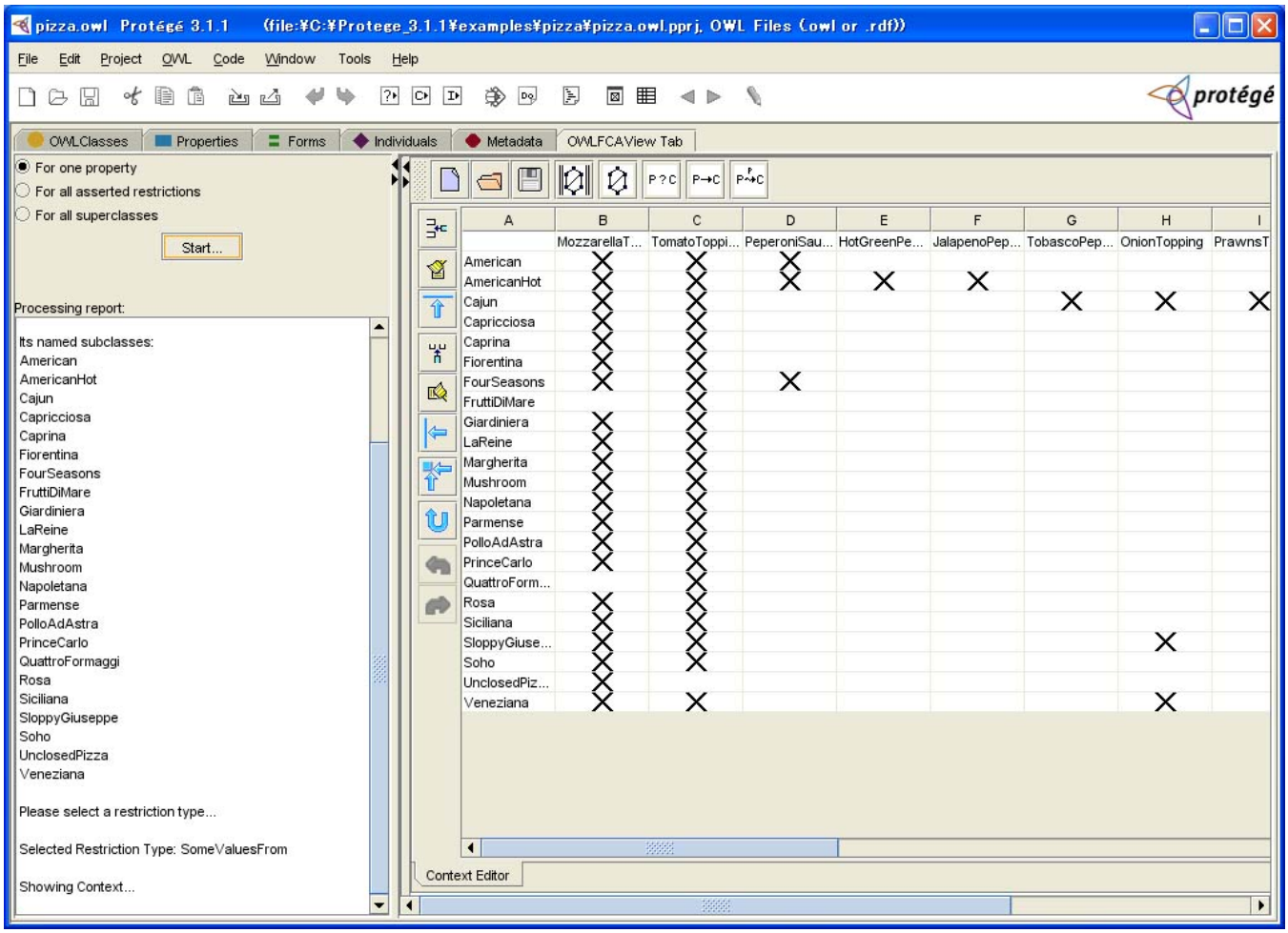
In the FCAView Tab, we assume that the instances (i.e. the formal objects) of a class in protégé-2000, together with its own slots (i.e. the formal attributes), could form a formal context that would interests the users. In particular, two kinds of formal context can be formed: 1) the instances of a class with its slots in Boolean type; 2) the instances of a class with its slots in Multiple Instance type.

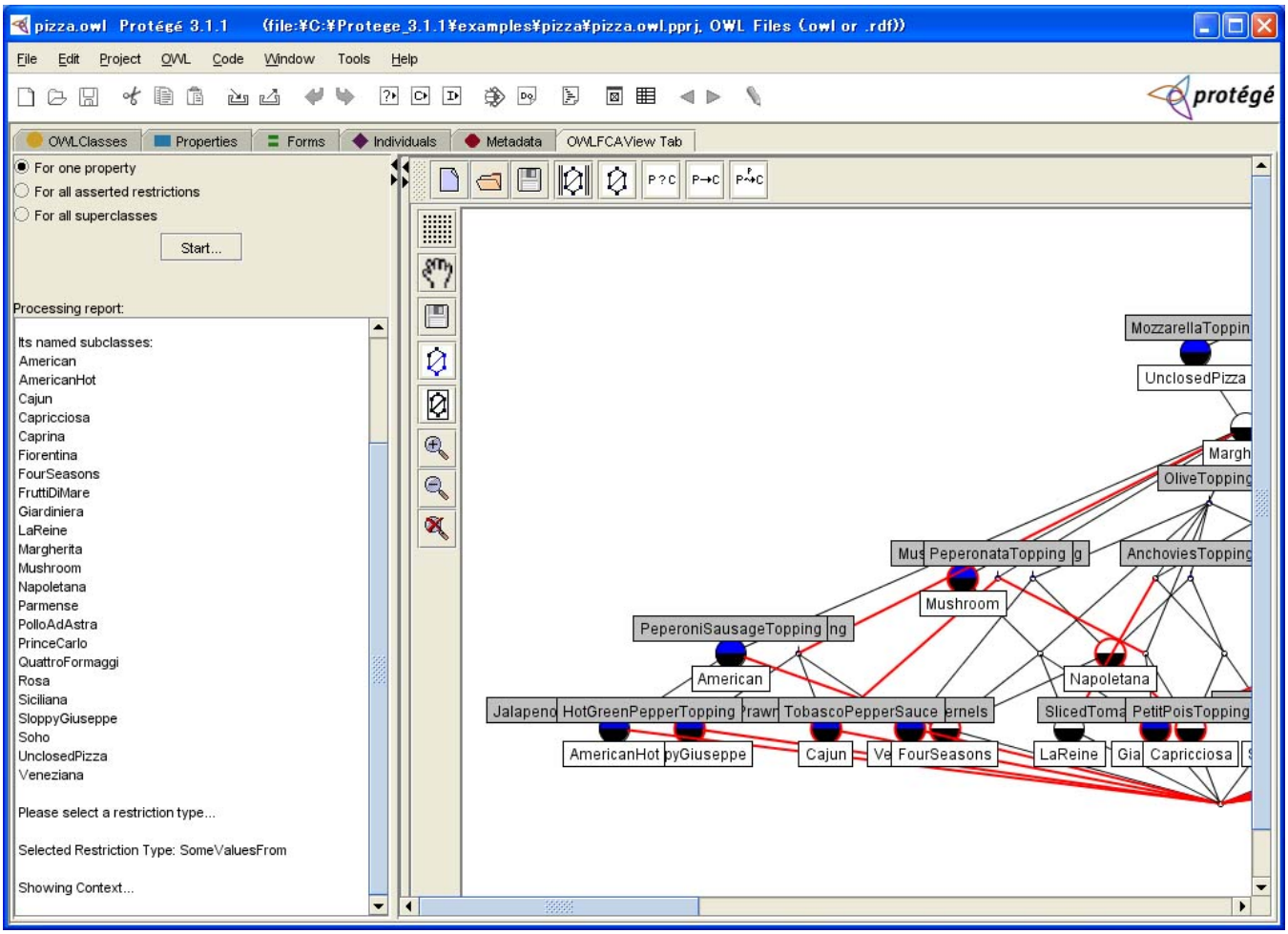

faceviewtabexample Protégé 3.0 (file:¥C:¥Protege_3.0¥examples¥fcaviewexample¥faceviewtabexample.pprj, Default Files (pont and .pin...
File Edit Project Window Help
protégé
Classes Slots Forms Instances Queries FCAView Tab
CLASS BROWSER
For Project: faceviewtabexample
Class Hierarchy
:THING
:SYSTEM-CLASS
FamilyMember (4)
Attribute (4)
Show Context...
Parameter Value
Show arrow relation don't show
Compressed
Object count 4
Attribute count 4
P?C P→C P↛C
A B C D E
female male old young
daughter
father
mother
son
Context Editor



OWLFCAView Tab for Protégé OWL ontology

In the OWLFCAView Tab, we developed a property-oriented way for visualization of OWL ontology in Protégé-2000. There are three basic specifications implemented in current version of our tool. The first perspective focused on one of the properties in a selected set of the classes. Here, the selected set of the classes was used as the formal objects and the fillers of the restriction of the selected property were used as the formal attributes. The second perspective focused on all asserted restrictions in a selected set of the classes. Here, the selected set of the classes was used as the formal concepts and the fillers of all asserted restrictions defined for the classes were used as the formal attributes. The third persepctive focused on all super-classes of a selected set of the classes. Here, the selected set of the classes was used as the formal objects and the super-classes of each class were used as the formal attributes.


pizza.owl Protégé 3.1.1 (file:¥C:¥Protege_3.1.1¥examples¥pizza¥pizza.owl.pprj, OWL Files (owl or .rdf))
File Edit Project OWL Code Window Tools Help
protégé
OWLClasses Properties Forms Individuals Metadata OWLFCAView Tab
For one property
For all asserted restrictions
For all superclasses
Start...
Processing report:
Its named subclasses:
American
AmericanHot
Cajun
Capricciosa
Caprina
Fiorentina
FourSeasons
FruttiDiMare
Giardiniera
LaReine
Margherita
Mushroom
Napoletana
Parmense
PolloAdAstra
PrinceCarlo
QuattroFormaggi
Rosa
Siciliana
SloppyGiuseppe
Soho
UnclosedPizza
Veneziana
Please select a restriction type...
Selected Restriction Type: SomeValuesFrom
Showing Context...
P ? C
P→C
P↛C
A B C D E F G H I
MozzarellaT... TomatoToppi... PeperoniSau... HotGreenPe... JalapenoPep... TobascoPep... OnionTopping PrawnsT
American
AmericanHot
Cajun
Capricciosa
Caprina
Fiorentina
FourSeasons
FruttiDiMare
Giardiniera
LaReine
Margherita
Mushroom
Napoletana
Parmense
PolloAdAstra
PrinceCarlo
QuattroForm...
Rosa
Siciliana
SloppyGiuse...
Soho
UnclosedPiz...
Veneziana
Context Editor



Downloads

The FCAView Tab plug-in (Ver 1.0) can be downloaded. Last updated: May 12, 2006.

The OWLFCAView Tab plug-in (Ver 1.1) can be downloaded. Last updated: May 12, 2006.

Documentation

The FCAView Tab plug-in is only compiled for protégé-3.0. A manual is provided and an example project can be downloaded.

The OWLFCAView Tab plug-in is only compiled for protégé-3.1. A manual is provided.

Level of Support

The FCAView Tab plug-in is developed and maintained by Guoqian Jiang. We would like to obtain any comments and advice from you.

Any questions about the tab, please contact to: Guoqian Jiang or Harold R. Solbrig, Division of Biomedical Informatics, Mayo Clinic, Rochester, MN.

License

The FCAView Tab plug-in will become open source soon.

References

Jiang G, et al. Context-based ontology building support for clinical domains using formal concept analysis. Int J Med Inform. 2003 Aug;71(1):71-81. (PubMed citation)

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Jiang G, et al. Formalizing the International Classification of Functioning, Disability, and Health (ICF) using Formal Concept Analysis (FCA). AMIA Annu Symp Proc. 2007 Oct 11:994. (PubMed citation)

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