

.OWL Reasoner (Pellets)

+ extra information

+ Swoop - error explanation  
- debug

+ classes  
(sub-)classes  
+ properties  
(+ instances)

- infer subclasses

- Pellet description / restrictions rules

- SWRL in Pellets

## Protege 3 & SWRL

\* install SWRL tab

\* install JESS engine

→ Run Rules  
& write back

## Protege 4 & SWRL

- Rules through: Window →

Views →

Out. views →

Rules

- text editor

- Run rules: Pellet

- no direct "method for  
"write back"

API (check JESS for)

## Protege API

• Java load

• SWRL reasoning or JESS

• SQWRL

• save back

need  
DRTOOLS

"default"

OWL API 3.2.4

Pellet 2.2

OWL ↔ Compatible ↔ OWL

.owl

how stored?

Instances?

↳ .xml

↳ relational database

(↳ export .rdf) + rdfs

↳ rel. database

↳

Load

structure .owl

instances

← rdf  
← SQL

.SQL

U:Q has students:

17/04/2020	17/04/2020	17/04/2020	17/04/2020
↑	↑	↑	↑

Pellet Reasoner.pdf - Adobe Acrobat Pro Extended

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# Pellet Overview

- Pellet is an open-source Java based OWL DL reasoner and it can be used with Jena and OWL API libraries.
- Features:
  - **Consistency checking:** ensures that an ontology does not contain any contradictory facts.
  - **Concept satisfiability:** checks if it is possible for a class to have any instances.
  - **Classification:** computes the subclass relations between every named class to create the complete class hierarchy.
  - **Realization:** computes the direct types for each of the individuals.

Handwritten notes and diagram:

- Person (circled in blue)
- Faculty member (circled in blue)
- Prof (circled in blue)
- Prof II (circled in blue)
- Full Prof (circled in blue)
- Asst Prof (circled in blue)
- Joy (circled in blue)
- Handwritten text: "find most specific classes that an individual belongs to" (with "most" underlined)

Pellet\_Reasoner.pdf - Adobe Acrobat Pro Extended

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## Pellet Overview

- Pellet is an open-source Java based OWL DL reasoner and it can be used with Jena and OWL API libraries.
- Features:
  - Consistency checking: ensures that an ontology does not contain any contradictory facts. *cheese topping vegetarian topping*
  - Concept satisfiability: checks if it is possible for a class to have any instances. *~~cheese vegetarian~~*
  - Classification: computes the subclass relations between every named class to create the complete class hierarchy.
  - Realization: computes the direct types for each of the individuals.

Inconsistency  $\left\{ \begin{array}{l} \text{two classes have contradiction} \\ \text{class has no instances} \end{array} \right.$

The screenshot shows a PDF document titled "Pellet Overview" displayed in Adobe Acrobat Pro Extended. The document content includes:

- Pellet Overview**
- Pellet is an open-source Java based OWL DL reasoner and it can be used with Jena and OWL API libraries.
- Features:**
  - Consistency checking:** ensures that an ontology does not contain any contradictory facts.
  - Concept satisfiability:** checks if it is possible for a class to have any instances.
  - Classification:** computes the subclass relations between every named class to create the complete class hierarchy.
  - Realization:** computes the direct types for each of the individuals.

Handwritten annotations in blue ink include:

- A circle around the word "pizza" in the title.
- A circle around the words "ice cream" in the title.
- A line pointing from the "Consistency checking" feature to the word "pizza".
- A line pointing from the "Concept satisfiability" feature to the word "ice cream".

Handwritten annotations in green ink include:

- A circle around the words "ice cream" in the title.
- A line pointing from the "Concept satisfiability" feature to the words "ice cream".
- A line pointing from the "Consistency checking" feature to the words "ice cream".
- A line pointing from the "Consistency checking" feature to the words "has topping" (part of a crossed-out phrase).

Data property : is a value  
has data type  
has email address  
job | unit.no

Object property : connect classes  
has student

Goto Meeting: 730-354-530

<u>Arne</u>	OWL	SMW
	property example	property
	type	type
		⋮ Subject



## Protégé 3x vs 4x

Feature	Protégé 3x	Protégé 4x
OWL	OWL 1.0 OWL and RDF(S) support	OWL 2.0 Pure OWL framework
API	<a href="#">Protege-OWL API</a>	<a href="#">OWL API</a>
SPARQL	Yes	Not yet
SWRL	SWRLTab	through a basic editor and pellet for reasoning
meta-modeling	allowing OWL Full	No OWL Full
Reasoner	through HTTP DIG interface or direct connection	Direct connection to FaCT++, Pellet and other DL reasoners
Multi-user Support	using the <a href="#">client-server version of Protege</a>	None ( <del><a href="#">Protege Client-Server</a></del> has not been migrated yet)
Database Storage Model	Ability to store ontologies in a database provided by the <a href="#">JDBC database back-end</a>	None (database back-end has not been migrated yet)

<http://protegewiki.stanford.edu/wiki/Protege4Migration>

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