
robot, an ontology tool

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Overview

From Ontodev
An OBO Tool

As a command line tool, or as a
library for software using a Java
Virtual Machine

Software
<https://github.com/ontodev/robot>

Documentation
<http://robot.obolibrary.org/>

Robot functions

annotate

convert

diff

extract

filter

help

materialize

merge

mirror

query

reason

reduce

relax

repair

template

unmerge

validate

verify

For example:

> robot help

Create ontology from template

```
> robot template --input your.csv \
  --prefix "ex: http://aprefix" \
  --ontology-iri "http://youriri" \
  --output your.owl
```

**Robot reads a table (your.csv), and
command-line values, and produces an
ontology (your.owl)**

See also

Overcoming the ontology enrichment bottleneck
with Quick Term Templates

<https://content.iospress.com/articles/applied-ontology/ao086>

Bulk Annotation

```
> robot annotate --input vivo.owl \
--annotation-file annotations.ttl \
--output annotated-vivo.owl
```

Robot reads an ontology (vivo.owl), and a set of annotations (annotations.ttl) and produces an annotated ontology (annotated-vivo.owl)

Convert formats

```
> robot convert --input vivo.owl \
--format ttl \
--output vivo.ttl
```

Robot reads an ontology (vivo.owl), and writes the assertions to an output file (vivo.ttl) in the specified format

Command line annotation

```
> robot annotate --input vivo.owl \
--version-iri "https://myversion" \
--output annotated-vivo.owl
```

Robot reads an ontology (vivo.owl), adds a version-iri annotation and produces an annotated ontology (annotated-vivo.owl)

Merging ontologies

```
> robot merge --input vivo.owl \
--input more.owl \
--output more-vivo.owl
```

Robot reads an ontology (vivo.owl), merges an additional ontology (more.owl) and produces a merged ontology (more-vivo.owl)

Extracting ontologies

```
> robot extract --method STAR \  
  --input vivo-isf.owl \  
  --term-file vivo-terms.txt \  
  --output vivo.owl
```

Robot reads an ontology (**vivo-isf.owl**), extracts terms listed in a term file (**vivo-terms.txt**), and using a specified method (**STAR**) produces an extracted ontology (**annotated-vivo.owl**)

diff ontologies

```
> robot diff --input vivo.owl \
--version-iri "https://myversion" \
--output annotated-vivo.owl
```

Robot reads an ontology (vivo.owl), adds a version-iri annotation and produces an annotated ontology (annotated-vivo.owl)

Query ontologies using SPARQL

```
> robot query --input vivo.owl \
--query my.sparql \
my.output
```

Robot reads an ontology (vivo.owl), runs a SPARQL query (my.sparql) and writes a file (my.output)

Use reasoner to derive axioms

```
> robot reason --input vivo.owl \
--reasoner ELK \
--output reasoned-vivo.owl
```

Robot reads an ontology (vivo.owl), derives axioms using the ELK reasoner and produces a reasoned ontology (reasoned-vivo.owl)

Validate ontology to OWL profile

```
> robot validate --input vivo.owl \
--profile DL \
--output validation-report.txt
```

Robot validates an ontology (vivo.owl) against a profile and produces a validation report (validation-report.txt)

Additional functions

Filter – select by object property

Materialize – materialization parent classes via reasoner

Mirror – create local copies of imported ontologies

Reduce – remove redundant subClassOf axioms

Relax – replace equivalence with subClassOf

Repair – replace deprecated classes

Unmerge – undo a merge in a chain

Verify – check if ontology satisfies rules defined by sparql

Summary

1. Very useful, multi-purpose tool
2. Still trying to understand/use extract
3. For examples, see
<https://github.com/ontodev/robot/tree/master/docs/examples>