

AUTOMATING ONTOLOGY MAPPING WORKFLOWS WITH ROBOT

WORKSHOP ON SYNERGIZING BIOMEDICAL ONTOLOGIES

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REBECCA JACKSON



ROBOT IS AN OBO TOOL

- Open-source Java library and command-line tool
- Includes 26 commands for working with ontologies:
 - ‘annotate’
 - ‘query’
 - ‘report’
 - ... and many more!
- <http://robot.obolibrary.org>

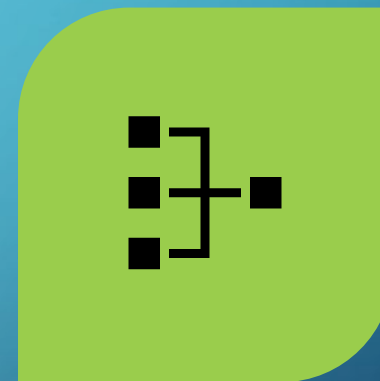
A SIMPLE ROBOT WORKFLOW



TEMPLATE



EXTRACT



MERGE

ECO-OBI INTEGRATION USING ROBOT

- In 2018, the Evidence and Conclusion Ontology (ECO) added axioms using the Ontology for Biomedical Investigations (OBI) to enrich existing logic
- No 1:1 mappings between ECO & OBI
- Design patterns used to create a ROBOT template

ROBOT TEMPLATE

- Each ROBOT template has three parts:
 1. Header
 2. Template strings
 3. Data
- Template strings can add annotations or logic
- Full documentation: <http://robot.obolibrary.org/template>

THE ECO-OBI TEMPLATE

ID	Label	Study Design	Independent Variable	Dependent Variable	Assay
ID		C is_specified_output _of some (assay and (realizes some (concretizes some %)))	C is_specified_ output_of some (assay and ('has part' some %))	C 'is about' some %	C is_specified_ output_of some %
ECO:0000006	experimental evidence	study design		process	assay

ROBOT EXTRACT

- Accepts one or more term IDs (CURIEs or IRIs) and an input ontology to produce an output module for those terms
- Supports MIREOT and SLME extraction methods
- Full documentation: <http://robot.obolibrary.org/extract>

PUTTING IT ALL TOGETHER

Custom Python script to get term IDs from labels in the template

'robot extract' with SLME extraction to produce import modules

'robot template' to create module with logical axioms from template

'robot merge' during release to combine into one file

The background is a gradient of blue and teal. On the left side, there are white circuit-like lines with small circles at the ends, resembling a printed circuit board. In the center, there is a large, dark, 3D-rendered pile of question marks. On the right side, there are more circuit-like lines in a lighter blue color.

QUESTIONS