FuL

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Background

The body of knowledge in biology, and of virology and immunology in particular, is incremental in volume and complexity. This is why for the production of that knowledge it will be useful to have it represented in a formal language inside a knowledge base and utilize different methodologies for analysis and manipulation, allowing verification of the validity of the conclusions obtained by the results from experiments.

This is why we are developing FuDePAN's Logic processor (FuL) (http://ful.googlecode.com) which objective is to organize, interpret, verify and explore the knowledge in molecular biology applied to virology and immunology in particular,so that we can found incongruence and automatically derivate conclusions from that knowledge, being it's main function the verification of conclusions obtained by results from experiments using queries.

The test case will be the following conclusions obtained from experiments done by FuDePAN:

- ***Validate the conclusions obtained in the Junin experiment about the temperature-change effects over the virus secondary structure:***
  Corroborate that the line of thought that include the predictions of the effects of febrile state over the Junin RNA secondary structure, in which is hypothesized that the temperature increment produce a reduction in the production of nucleoproteins because the hairpin loop in the intergenic region present dissimilar characteristics when is compared the two ambisense genome strings when the temperature is increased.

This tool has a model based on extensibility in plug-ins, allowing replacement and adding of new functionalities to the system, simplifying the adaptation of it to new types of knowledge. For that it will be provided a API, which defines the way in which knowledge is flows between the plug-ins and Ful's core, and a SDK composed of libraries and tools required for building plug-ins.

The kernel of the tool will be composed of a planner based on PDDL (Planning Domain Definition Language) semantic and a manager that will be the intermediate between the plug-ins registered in the session and the planner. Via a XML file, it can be possible to register the plug-ins that FuL will utilize in that session and configure the session variables, both from FuL and the plug-ins.

Also we will provide a knowledge representation language for virology area base on DL(Description Logic), which will be used for representing knowledge in the KB(Knowledge Base) to load in that session and make queries to FuL. In particular, FuL will include a Semantic Reasoner based on DL as a plug-in.

Referencias

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