



iPhronesis™: Automation of Knowledge Framework

Overview

iPhronesis™ is a powerful next generation knowledge automation platform that comprises of natural language processing (NLP), databases, analysis and visualization modules, and is primarily designed to work with biomedical data. We are witnessing an explosion in the amounts of data generated in biomedical research, and thus enabling technologies has empowered users to meaningfully combine data from disparate heterogeneous data sources. Optra's NLP (and machine learning modules) are used to convert unstructured data such as publications to structured form, and for removing bottlenecks from processes such as automation of curation.

Industry Challenges

The entire biomedical community is faced with working with unprecedented amounts of data. There is a clear need for not only computationally advanced solutions to work with such data, but also smart tools that are able to understand the context of the data, extract the data meaningfully and allow for downstream use and visualizations.

Researchers also want to combine data from multiple data sources simultaneously such as from primary publications, databases, clinical trials and medical records. Combining complex heterogeneous data is challenging as it poses unknowns, such as the lack of control of vocabulary, validity of the data and even data provenance.

Even when such data is intelligently parsed, it should be computationally accessible in a simple form. In this context querying of data is important, such that searches are not Boolean but instead are contextual and based on applying meaning to the input queries.

Solution

iPhronesis™ was specifically designed to work with unstructured data. Our NLP core suite is used on unstructured data and converts it into a structured form while discovering biological relationships within the datasets. A few of the NLP core suite modules are described below:

- **Summarizer:** This module was developed to quickly and accurately generate summaries of input text. This is particularly useful for the purpose of qualifying a document. For e.g. in one implementation we used the summarizer to determine if an input document is valid for curation. Users define their target schemas and using machine learning the output from the summarizer is validated.

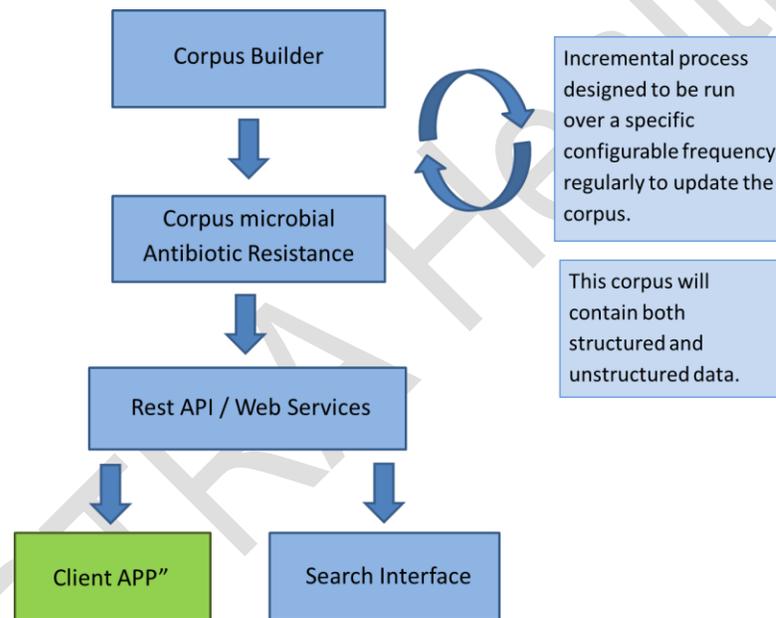


Figure 1: Sample Schematic of Automation of Curation

- **Document organizer:** This module was specifically designed to discover relationships in a document. By using one of the largest ontologies, this module accurately maps the document to ontology and then leverages the relationships within the document. In one implementation we used the document organizer to dynamically map it to a user defined schema and extract content from the input documents.
- **QA module:** This module was specifically designed to convert human readable queries into machine queries, and applies context. This is providing the power to “understand” the input, and then provide the output in a simple and easy-to-understand format.

Optra Health, LLC

530 Lakeside Drive, Sunnyvale, CA 94085

Tel: +1-408-524-5300, Fax: +1-408-524-5302, Email: info@optrahealth/iphronesis.com

iPhronesis™ Benefits

- iPhronesis™ is a platform designed to address the complex problems faced in biomedical research that require combining disparate complex heterogeneous data sources.
- Users develop custom “apps” in iPhronesis™ to meet their specific requirements.
- The use of the 70% ready building blocks from iPhronesis™ Automation of Knowledge Framework allows for building applications in significantly less time.
- Optra’s extensive domain, technical expertise and in-house team of software development professionals, scientists, medical doctors and regulatory experts offer clients multiple skills under one roof ensuring streamlined project delivery.

About Optra Health

Optra Health is the “Data-driven Intelligence Company” leading initiatives within healthcare, life sciences and medical devices market segments. Optra’s solutions and services harness data for translational and clinical research, generate real world evidence for pharma, and provide expert product engineering for medical device and laboratory automation organizations.

Optra Health is an ISO-certified global organization with deep domain expertise in medical devices, lab automation, life science informatics and healthcare IT solutions. The company provides a fully-scalable, cost-effective OptiShore™ delivery model. This enables customers to choose the optimal balance between on-site, on-shore, and off-shore development that will best address their budget and collaboration requirements. With Optra Health, customers are able to shrink their time-to-market by leveraging practical, building-block based solutions. Committed to clear communication and total transparency, the company consistently meets or exceeds its clients’ expectations. Offering a full complement of expert engineering and consulting services, Optra Health is aligned to real business needs applied over the entire product development lifecycle. The robust, scalable and efficient IT infrastructure of the company, together with its outstanding project management team, consistently ensures superior results. Optra Health’s global delivery model helps its customers cut costs by about 50% without compromising on quality and realize a 200% improved production cycle. Visit Optra Health today: <http://www.optrahealth.com>

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