OntoVista

Ontology Visualization
OntoVista

- Can visualize RDF and OWL
- Provides nested view of classes and instances
- Powerful navigation capabilities
- Provides Fisheye zooming
  - Zoom-in and Zoom-out feature in shrimp view
- Visualization of ontology can be done using the layouts
  - Spring layout
  - Tree layout
  - Radial layout
OntoVista

- Hierarchical Tree
  - Shows classes and instances
  - Can navigate to the ontology node by selecting the class or instance in the tree

- Can filter properties
OntoVista

- Enhanced search options
- Filtering/Unfiltering the results in search space
- Filtering of relationships
  - Property tree
  - Filtering relationships
    - Property and its sub properties
    - Filtering its sub properties
OntoVista

• Browsing the ontology
  – Selecting an instance & visualizing its neighborhood (n-hops)
• Display of Glycan
  – Uses ontology information to generate glycan images
  – Based on the residue types in the ontology the tool automatically creates different residue shapes and colors
    • Eg all residues of type Manp are represented as green circle, GlcpNAc as blue square
Search and navigation

- Instance/Class search
  - Regular expression and case sensitive
  - Navigation to the specific class/instance in ontology
- Relationship search
- Description search
- Triple search
- Semantic search
Search and navigation Capabilities

- **Triple Search**
  - Search for subject instance/class (given property and object)
  - Search for subject instance/class (given property and object class)
  - Search for object instance/class (given property and source instance)
  - Search for object instance/class (given property and source class)
  - Navigation to specific region in ontology upon selection of class/instance in the result list

- **Semantic Search**
Search continued

• Description Search
  – Rdf comment search
  – List all classes and instances that contain this “description string”
  – Navigation to specific region in ontology upon selection of class/instance in the result list

• Relationship search
  – List all classes and instances that contain this relationship
  – Navigation to specific region in ontology upon selection of class/instance in the result list
Filtering/Unfiltering option

- Jambalaya allows the filtering of single nodes or collections of nodes.
- User can select one or more retrieved results and filter them out from the display.
- Unfilter option was added to retrieve the filtered node, in case user decides of not removing it.
- This option is closely attached to the graphical visualization.
Property Tree

- Property Tree
  - It contains property with its respective sub properties
  - The user would be able to filter the property & its sub properties or just its sub properties
  - The tree is linked to the visualization so that the arc or relationships filtered can be visualized
Glycan imaging

- Uses ontology information to generate images of Glycans
- Based on the residue types in the ontology the tool automatically creates different residue shapes and colors
  - Eg all residues of type Manp are represented as green circle, GlcpNAc as blue square
- Demo of the Glycan display
Image generation is generalized

- Will use property file and would create clusters (Instance level) based on the relationships provided (similar to glycan imaging)
- The shapes and colors of each instance (residue) types would be provided in the properties file
- Position of nodes in layout (to and from nodes) are determined by the type of link or relationship that connects them
  - Properties file would contain this information
    - For example if the link type is 4 then the source node would be aligned to the left
- This would provide ability to generate images
Visualization of Glycans

User clicks on Display Glycans
Glycan image of N-Glycan

Linked through 2

Linked through 6

Linked through 4
Zooming in *N-glycan_a-D-Manp_7*
Turning on the display mode

Click on turn-off
Glycan display mode turned off
Triple search

• Get all classes and instances that has property `has_carbohydrate_residue` and property range `carbohydrate_residue`

• Get all object instances that are connected by `has_carbohydrate_residue` from the subject instance `N-glycan_00020/N-glycan_00021`. 
Semantic search

- Get all instances of type `person` who is an Entrepreneur/Singer
- Get all instances of type person who has some relationship with the context class
  - Get all instances of type `person` who has some relationship (`lives-in`) with context class(State)
Semantic Search

- Get all instances that matches the pattern and has relationship with the context class
  - Get all instances that match the pattern “M” and has relationship lives_in with context class US
  - Find all n-glycan that are also of type complex_n-glycan
  - Get all instances that match the pattern “N-glycan” and has relationship has_carbohydrate_residue with the context class N-glycan_beta-D-GlcpNAc / N-glycan_residue(super class)
Visualizing the neighborhood

- Visualizing the neighborhood of a particular instance or class (limiting it to k-hops)
- Can restrict the properties
  - User can select the properties that connect the source instance upon which the BFS is done
  - Number of levels