

# DIaMOND: A Degree of Interest Model for Ontology Navigation and Development

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An ontology is a formal description of the concepts that exist in a domain and the relationships between those concepts [1] that allows researchers and domain experts to exchange and share knowledge. A domain expert, or *knowledge engineer*, defines classes representing the concepts in the domain with slots representing the properties of, and the relationships between, the concepts. Each class can have subclasses which represent more specific concepts.

Understanding, maintaining, and evolving ontologies becomes increasingly difficult as the size and complexity of the ontology grows. Specialized ontology editors such as Protégé are intended to help knowledge engineers find, examine, and navigate between places of interest within the ontology; however, users report experiencing disorientation when navigating through large, complex ontologies. To mitigate this disorientation, advanced visual interfaces such as Jambalaya, a plug-in for Protégé shown in Figure 1, have been developed to leverage people's cognitive abilities.

In Jambalaya, the ontology is represented as a graph where classes and instances are depicted as nodes, and relationships between the classes are represented as directed arcs. Jambalaya provides multiple, interchangeable *views* of the graph structure allowing users to explore multiple perspectives of information at

different levels of abstraction. However, as the ontology grows, the usefulness of these views decreases. The concepts relevant to the task at hand become a small subset of those shown forcing users to navigate and, potentially, to understand the entire ontology to perform the task.

To help knowledge engineers focus on the task at hand and to facilitate finding concepts of interest within the ontology, we are developing DIaMOND, a Degree of Interest Model for Ontology Navigation and Development. DIaMOND monitors user activity and the instance data in the ontology to determine the relevance of concepts to the task at hand. DIaMOND then uses this data to adapt the visualization and draw the user's attention to concepts of interest.

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## References:

- [1] N. Ernst. *Towards Cognitive Support in Knowledge Engineering: An Adoption-Centred Customization Framework for Visual Interfaces*, Masters Thesis, University of Victoria, BC, Canada. 2004.

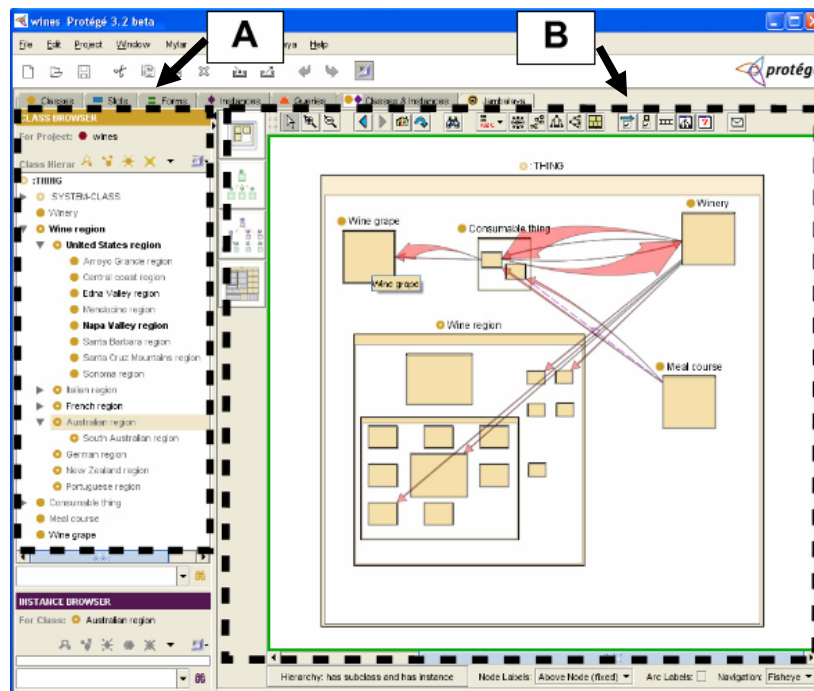


Fig. 1. The Jambalaya tab within Protégé. With DIaMOND the interesting concepts are highlighted using A) darker and bold text B) larger node size.