BLUSNO Tool for SNOMED CT Visualization and QA Support

Presenter: Christopher Ochs, New Jersey Institute of Technology, Newark, NJ 07102

Audience

Individuals interested in visualizing and exploring the content and structure of SNOMED CT.

Objectives

The presentation will focus on BLUSNO, a tool for visualizing and exploring the content and structure of SNOMED CT hierarchies using Abstraction Networks (ANs), which are compact summarizing networks.

Abstract

Understanding and visualizing SNOMED CT is difficult due to its size and complexity. To address this complexity we have developed algorithmic derivations for compact summarizing networks called Abstraction Networks (ANs). The *partial-area taxonomy*, taxonomy for short, is a type of AN for SNOMED CT that groups concepts of similar structure and semantics. The primary taxonomic elements are the *area*, summarizing concepts that share a relationship structure, and the *partial-area,* represented by a node of the taxonomy, summarizing hierarchically-related concepts in an area. Taxonomies allow a user to understand the content and structure of an entire SNOMED CT hierarchy. We present the Biomedical Layout Utility for SNOMED CT (BLUSNO) [1], a tool which enables the visualization and exploration of a hierarchy through the lens of a taxonomy.

BLUSNO presents taxonomies in a dynamic, visual environment where all elements are interactive. Selecting different elements provides knowledge about the taxonomy and the underlying hierarchy. This allows a user to explore SNOMED CT without looking at concepts one-by-one. A user can view taxonomies for multiple releases of the same hierarchy side-by-side and analyze structural differences. BLUSNO also includes an innovative concept-centric browser that works side-by-side with taxonomy visualizations, enabling a concept neighborhood view. For large hierarchies, such as Procedure, the BLUSNO system includes the ability to create and visualize subsets of taxonomies called *sub-taxonomies*, enabling a user to focus on one comprehensible portion of a large hierarchy, avoiding being overwhelmed by the magnitude of the hierarchy's content.

BLUSNO is currently in development and will be publicly available when complete. In practical settings, BLUSNO can be used to obtain orientation into SNOMED CT's content. Instead of viewing individual concepts without context, one can use a taxonomy to obtain a compact, global view of a SNOMED CT hierarchy. This use will be demonstrated by exploring the Specimen and Procedure hierarchies of SNOMED CT. We will also demonstrate how taxonomies can assist in improving SNOMED CT's content. We have previously shown that taxonomies support SNOMED CT quality assurance by identifying groups of concepts that are more likely to be inconsistent [2]. BLUSNO can identify these suspicious concept groupings, for example concepts that overlap between more than one node of the taxonomy or concepts that belong to very small nodes.

References

1. Geller J, Ochs C, Perl Y, Xu J. "New Abstraction Networks and a New Visualization Tool in Support of Auditing the SNOMED CT Content." AMIA Annu Symp Proc. 2012, p. 237
2. Halper M, Wang Y, Min H, et al. "Analysis of Error Concentrations in SNOMED." AMIA Annu Symp Proc. 2007, p. 314