Adam Fedyniuk

Kogni_LAB Nicolaus Copernicus University in Toruń

Trans-Domain Aspects of Modular Structures

Applying Modularization in Knowledge Engineering and Cognitive Science

K e y w o r d s: metamodeling, modularity, knowledge engineering, connectomics, proteomics, centrality, network theory, ontologies, interdisciplinarity.

A b s t r a c t

The application of modular structure in the context of various solutions, both engineering and theoretical, possesses certain limitations. The problems that arise are very salient amidst the discourse concerning the design of modular ontologies and implementation of Semantic Web technologies. Despite a wide array of obstacles related to aptly used modularity in knowledge engineering, there is still a never-ending source of inspiration for the solutions concerning metamodeling, designing and hybridizing knowledge representation systems. Being inspired by natural occurrences of modu lar structures can be a potent source of innovation and a foundation for develo ping new approaches both in the domain of knowledge engineering and cognitive science. Due to reference to the computa tional character of the modular structu res present in various domains that are deemed interdisciplinary, one can arrive at the conclusion that certain observed regularities connected with network or ganisation (i.e., centrality types and me asures) are in fact trans-domain (they go beyond their respective domain and have application in a different domain that concerns itself with studying relational structures of various forms) or they pos sess at least the projectional character in regard to ontology metamodeling.