

Knowledge discovering from multiple sources in agriculture value-chain. Diego Torres, Mario Lezoche, Alejandro Fernández, Leandro Antonelli and Herve Panetto

Diego Torres, LIFIA - Facultad de Informática - Universidad Nacional de La Plata, Argentina, diego.torres@lifia.info.unlp.edu.ar

Mario Lezoche, University of Lorraine, CNRS, CRAN, France, mario.lezoche@univ-lorraine.fr

Alejandro Fernández, LIFIA - Facultad de Informática - Universidad Nacional de La Plata, Argentina, alejandro.fernandez@lifia.info.unlp.edu.ar

Leandro Antonelli, LIFIA - Facultad de Informática – Universidad Nacional de La Plata, Argentina, lanto@lifia.info.unlp.edu.ar

Herve Panetto, CRAN, France, Herve.Panetto@univ-lorraine.fr

The agri-food value-chain results from the interaction of multiple stakeholders. Each stakeholder contributes with a distinct perspective and interest. The diversity in activities and work forms in the value-chain results in a wide variety of data sources, and data management practices. It is common to find information managed in databases, document repositories, or even social media. Document formats also vary (e.g., CSV, PDF, XML, etc.), and so do content types (e.g., graphics, tables, lists, images, etc.). In this context, effective decision-making relies heavily on the availability of interoperable, comprehensive, accurate, and timely information. Knowledge graphs (KG) are graph-based data models for knowledge extraction from multiple structured and unstructured sources that support multilingual integration. KG are frequently combined with knowledge discovering approaches like embedding and multi-relational data mining methods like the Formal Concept Analysis (FCA) and its extension the Relational Concept Analysis (RCA). This work proposes an automatic pipeline process to combine and align different agri-food information sources to discover new pieces of knowledge based on KG and RCA. The approach combines several research lines: (1) entities and relations detection in different sources; (2) alignment with a shared ontology description, based on GACS and AGROVOC, and (3) discovering new knowledge with Relational Concept Analysis in the shape of association rules formalized following the description logic.