

Design and Implementation of a Navigation System for Protein Interaction Network

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Proteins may not only perform a few of molecular functions, but also interact with a number of other proteins to accomplish a biological process successfully in cell. These interactions among proteins could be defined as a PIN (Protein Interaction Network) representing biological relationships in cell. That is, proteins are represented as its vertices and interactions as its edges among vertices. In this paper, we propose a navigation system for PIN, which can gradually drive users into specific information implied in PIN according to their intent. It consists of two core components; retrieval and visualization. The former performs a concept-based retrieval using Gene Ontology (GO), which can search user-intended PINs from database. The latter visualize automatically the retrieved PINs as the form of optimized layout with our advanced MFDP (Multi-Leveled FDP). In special, it is suitable to visualize a PIN that consists of a number of disconnected sub-networks.