

EDITORIAL

HEALTHCARE INFORMATION VISUALIZATION AND VISUAL ANALYTICS

This special issue is intended to deal with efficient and effective data representation and transformation, visual representation in limited screen space, real time visual interactive user interface, computational data analysis, visualization knowledge discovery, massive data processing speed, cost reduction and data interoperability in healthcare domain. These objectives clearly align with the trans-disciplinary goals of the Society for Design and Process Science (SDPS) and its flagship journal SDPS-Transactions. In this special issue, we intend to address the processes within the domain of healthcare information using techniques such as, but not limited to, information visualization and visual analytics.

In “A Relationship-Centric Hybrid Interface for Browsing and Auditing the UMLS”, the authors developed the Neighborhood Auditing Tool (NAT), a concept-centric browser and auditing tool for the Unified Medical Language System (UMLS). This paper discussed the “Relationship, Audit Set Builder and Concept Neighborhood Auditing Tool” (RAC-NAT), an expansion of the NAT into a multi-faceted browsing and auditing tool.

In the healthcare domain, information sharing and interoperability are required among different organizations, not only within a hospital or medical network but also across affiliated enterprises and community boundaries. The authors of the paper, entitled “ONTOAPP: An Ontolog Application on Solving Some Heterogeneous Problems of Healthcare Information Sharing and Interoperability,” proposed the use of ontology computing to resolve the issues regarding healthcare information sharing and interoperability.

Through the visualization of raw medical data, visual data analysis was applied to the medical data using probably theory to provide valuable information for preliminary diagnosis. In “Visual Analysis of a Cardiovascular System Based on ECG and ADP Signals using evolvable Hardware Design,” experimental results demonstrate that the incremental evolution approach is feasible, scalable, and promising as a personalized medical simulation tool.

The final two papers are included for addressing a complex process model. In “A Value Based Business Process Management Network Model,” a formal specification language is constructed for acquiring complex process codes directly from the target, where knowledge is hidden among and within composite and elementary complex processes. In “Complexity Measures for Network Process Evolution,” the Process Management Network model acquires the knowledge to establish the process structural complexity measures and defines the criteria for partitioning, restructuring and rewriting processes. This shows the possibility to generate traceability, interoperability, synchronization among different and conflicting contexts.

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