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Semantic annotation, integration, and search of microgenomics data

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Prior biological and biomedical research has indicated that microRNAs (a.k.a. miRNAs or miRs) perform critical roles in biological processes by regulating their respective target genes. Thus, miRs are closely associated with various human cancers and have shown great potential in many aspects. Unfortunately, cancer biologists are facing significant challenges and critical barriers in knowledge discovery, unification, and dissemination in miR research (microgenomics in general). The manual integration of information on miRs and their target genes is challenging because it involves an extremely large amount of heterogeneous data sources to be explored. As the very first semantic computational tool specifically designed for the miR field, OmniSearch will significantly facilitate miR knowledge acquisition in oncology within a wide scope. It can be used by biologists and bioinformaticians to obtain unified miR knowledge and derive insights for the regulation and control of cancer disease processes. By providing the community with a deeper understanding of miRs' important biological functions, OmniSearch will also assist miR bio-curation and new biological experiment design. In addition, OmniSearch is by its nature extensible and can be readily generalized to other biomedical areas beyond the miR and microgenomics field.

Biography

Jingshan Huang is an Assistant Professor of Computer Science in the School of Computing at the University of South Alabama (South). In May 2007, he has received the PhD in Computer Science and Engineering from the University of South Carolina, under Dr. Michael N. Huhns. Prior to his current position, he was an Assistant Professor at Benedict College and a Research Specialist at the Medical University of South Carolina, respectively. His research areas are: Data semantics and web data; artificial intelligence and big data; and bioinformatics and computational biology, with a unifying theme of the semantics of data and information. He directs South Biomedical Informatics Group.

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