Special Issue Call for Papers

“Data Mining for Medicine and Healthcare”

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Healthcare systems around the world are struggling to keep up with patient needs and improve quality of care while reducing costs. At the same time, an increasing amount of data is being captured in the form of Electronic Health Records (EHR): health insurance claims, medical imaging databases, disease registries, spontaneous reporting sites, and clinical trials. Government regulations are requiring healthcare providers to not only store this data in an electronic format, but also to use it in meaningful ways. For example, one of the intended outcomes of the healthcare reform in the USA was meaningful or secondary use of EHRs to improve patient care. Using this data in an effective way to improve quality of care and reduce costs requires innovation in data mining as well as academic, industry and government partnerships.

 Needless to say, EHR also presents many challenges, such as 1) Data Privacy: How to mine effective insights and preserve data privacy simultaneously; 2) Integrating Knowledge and Data Driven Insights: How to effectively combine knowledge and data driven insights to provide effective clinical insights; 3) Heterogeneity and Scalability: How to effectively and efficiently mine insights from vast amounts and highly different types of information in EHRs.

The major goal of this special issue is to bring together the researchers in healthcare and data mining to illustrate pressing needs, demonstrate challenging research issues, and showcase the state-of-the-art research and development. The topics of this special issue include, but are not limited to, the following:

**Data Processing**
- Data quality assessment and improvement: preprocessing, cleaning, missing data Treatment, etc.
- Conversion and medical terminology standards
- Statistical analysis and characterization

**Novel Computational Models for Healthcare Data Analytics**
- Cloud-computing models and scalability
- Collaborative care delivery models
- Disease modeling and temporal models
- Intelligent payment models
- Mining knowledge from medical imaging data
- Medical fraud detection

**Text Mining for Healthcare Data**
- Information extraction from biomedical and clinical corpora (full texts, abstracts, EHRs, clinical trials, etc.)
- Evaluation methods of biomedical applications, shared tasks
- Information retrieval from large biomedical data collections
- Information integration for data and text mining

**Visual Analytics for Healthcare Data**
- Exploration of longitudinal clinical data
- Visualization of prescription drugs and interactions
- Improving operating room (OR) workflow with visual analytics
- Clinical dashboards
- Data summarization
- Visual data fusion and medical ontologies research

**Privacy and security issues in healthcare**
- Feasibility of Health Information exchanges
- Privacy-preserving healthcare data and knowledge management

**Application of Data Mining Models for Improving Healthcare**
- Improved patient care and cost-reduction
- Comparative effectiveness research
- Clinical decision support
- Bio-surveillance
- Therapy optimization
- Case based reasoning