

Complex Human Interactions in Medical Records and Atlases Network - the CHIMERA Project

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The increasing availability of large-scale biomedical literature under the form of public on-line databases, has opened the door to a whole new understanding of multi-level associations between genomics, protein interactions and metabolic pathways for human diseases via network approaches.

Many structures and resources aiming at such type of analyses have been built, with the purpose of disentangling the complex relationships between various aspects of the human system relating to diseases.

In our work we mined large-scale public on-line databases to construct a multi-layer network using human diseases as its core.

Using web scraping for data extraction and a new string standardizer preprocessing pipeline based on synonyms mapping and stemming, we merged many kinds of bio-medical databases in a single network-of-networks structure. Informations about disease, metabolites, drugs and other biomedical significant data were merged in a single database.

A characterization of the structure will be discussed using centrality measures and some of significant queries-subnetworks will be presented. The aim of such network structure is to unveil hidden relationship by the underwhelming overlap between single-type information across different databases.

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