INTERNET MEDIATED, MULTI LAYER MEDICAL TERMINOLOGIES RETRIEVER: TOWARDS WEB-BASED UMLS THESAURUS AND SEMANTIC SEARCH ENGINE

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ABSTRACT
In this paper, we propose a system that will play a role as a search engine within UMLS database. The system is intended to facilitate users ranging from common users to advanced users such as physician, biomedical domain expert or medical caregivers to employ and retrieve useful information especially biomedical terminologies from system which apply and integrate with information technology encompassing internet and database technologies. Besides providing basic information, such as definition of particular terminology, this system applies terminological synonyms, and most preferred term used in multilingual as well, which displays the visualization in a user friendly graphical interface. The system incorporates multidimensional and multi-layer relations between terminologies, from top-down relation such as parent-child relationship, horizontal relation such as sibling relationship, expanded or diminish relationship included as well. A semantic network search incorporates the various semantic types of each concept in search, and the semantic relationship between two semantic types, thus enabled the retrieval of concepts related to the pertaining semantic type. The system endeavors to complement health experts by helping them deal with disparate medical term standards used worldwide.

Keywords
UMLS, Telemedicine, Telehealth, Medical Informatics

1. INTRODUCTION:
A BRIEF INTRODUCTION TO UMLS, A BIOMEDICAL INFORMATION SOURCES
Unified Medical Language System (UMLS) is large repository designed intended to maintain all the medical terms in a structural approach. UMLS contain 3 major categories, (1) Methathesaurus [1] that give comprehensive information for large volume of medical terms. This provides definition for each medical term, all the Synonyms term and a most preferred term in each language, as well as domain specific ontology (2). Semantic network that used to enhance the manipulation of Methathesaurus, provides defined semantic type and semantic relation, in addition to relationship with concepts in Methathesaurus (3) Lexicon [2] that contains a source appear in free text (narrative) format, which indicates source that base on domain-expert's unstructured natural language format. Our proposed system is capable of making the most of the UMLS database, retrieve useful user-needed information, reveal the relationship between medical terms, show and list out Synonyms and semantic network in a user-friendly graphical interface, thus facilitate the possible achievement in telemedicine terminology standardization. We will discuss in further detail on features provided by this system in the following sections.

1.1 Related Works
Merriam-Webster Medical Dictionary [3] is an online web-dictionary. It contribute information such as pronunciation and brief explanation to the term or keyword enter by user. It is appropriate for user who intend to search for basic information or terminology understanding purposes. The target group of this dictionary might limited to user which not intend to have advance explanation or understanding especially in medical aspect. It will not be suitable for an advanced user who may want to know in depth on the particular medical terminology such as information related to medical classification or relationship.

![Medical Dictionary](image)

Figure 1. On-line medical dictionary (CancerWEB)