

STUDY ON HEALTH CARE LIFE LOG BY THE LEVEL OF CARE REQUIRED USING KEYGRAPH TECHNOLOGY IN TEXT DATA MINING

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Abstract— In the present investigation, to characterize the tremendous measure of Care Life Log data that happens in nursing in one Hospital Long-term Health Care Facility by level of care required, data mining was completed. The trademark vocabulary from the Long-term Health Care Facility's Care Life Log was utilized to coordinate and investigate the level of care required. There are five levels of care, with Level 1 vocabulary including entertainment, latrine, morning, evening, and so on. The level of care step by step increments from Level 1 to Level 5, which has vocabulary that incorporates tube, risk, treatment, expulsion, and revelation. The higher the level, the more regrettable the wellbeing condition and in this manner the more noteworthy care required. These levels take into account a reasonable investigation of a patient's condition. This investigation has prompted a change in Quality of Life and also abatement in bungles between the level of care required for patients and the level of care given via caretakers. The nursing field requires productivity in social insurance administrations. Along these lines, change and constant data accumulation are essential. There is a requirement for the accumulation of data in general in the long haul working of medicinal services benefits and in addition expansive scale data collection. In the future, we expect to build up an EMR (Electronic Medical Record) that can be made semi-consequently as per the level of care required.

Index Terms—text data mining, care life log, KeyGraph, Electronic Medical Record.

1. INTRODUCTION

Data mining searches for correlations among things by analyzing a nice deal of such accumulated knowledge as sales knowledge and phonephone decision histories. Text data processing resembles data processing as a result of it extracts helpful data {and information|and knowledge|and knowledge} by analyzing the wide-ranging viewpoints of written data [1].

Recently, interest has up in text data processing as a result of it uncovers helpful data buried in an exceedingly great deal of accumulated documents [2]. analysis has began to apply text data processing to drugs and healing [3]. additionally, the speed of electronic medical treatment knowledge is fast owing to the fast informationization of medical systems, together with EMRs.

Recently, analysis on data processing in medical treatment that aims for data and pattern extraction from an enormous

accumulated information is increasing. However, several medical documents, together with EMRs that describe the treatment info of patients, square measure text info. Moreover, mining such info is sophisticated.

The data arrangement and retrieval of such text components become tough as a result of they're typically delineated in an exceedingly free format; the words, phrases, and expressions square measure too subjective and replicate every author [4]. maybe within the future, the text data processing of documents are used for lateral retrieval, even within the medical treatment world, not solely by the numerical values of the review knowledge however additionally by computerizing documents [5].

In this gift study, to classify the Brobdingnagian quantity of Care Life Log knowledge that happens in nursing in one

Miyazaki Hospital long Health Care Facility by level of care needed, text data processing was disburser victimization KeyGraph. Then we tend to pictured this info.

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II. CARE LIFE LOG AND THE LEVEL OF CARE REQUIRED

Care Life log records a amount of twenty four hours of the caregiver's activity. it's additionally utilised as a long service content record. The recording itself isn't the most purpose,

however it transmits data to others, accumulates and analyzes knowledge, and aims to attach the service to higher care.

The level of care needed is categorised as commonplace Support one and a couple of, and Essential Support one,2,3,4, and 5. Essential Support one indicates that an individual will eat and use the comfort station by themselves.

Essential Support five indicates an individual is usually unable to try and do this stuff by themselves.

Essential Support Levels square measure printed below:

(1)Level 1: He or she wants care by others once activity advanced actions or moving. there's a detected decrease in physical and mental capabilities.

(2)Level 2: identical conditions as Level one with the addition of needing some help once uptake or victimization the comfort station.

(3)Level 3: The patient cannot use the comfort station by themselves and desires help activity any action indicated by Level two.

(4)Level 4: The patient will hardly use the comfort station or perform any action indicated in Level three.

(5)Level 5: The patient will hardly eat or use the comfort station and desires help with the majority actions.

III. EMR

When the medical data system was updated in could, 2006, the University of Miyazaki Hospital introduced a package version of the EMR system, that was developed unitedly with a neighborhood IT company. The recorded main information embrace a patient's symptoms, laboratory results, prescribed medicines, and also the pursuit of the modified information. Cases that build each the photographs of X-rays and also the appended material electronic don't seem to be rare either. If a network is employed, EMR may be shared not solely in one hospital however additionally among 2 or additional hospitals. The text information in EMR contains paper notations regarding scrutiny reports, in-patient care plans, nutrition management plans, bedsore-prevention plans, fall checks, operation notes, and summaries. The doctor fills within the passage record and also the nurses fill within the nursing records, that embrace the life and scrutiny history of a patient.

The care life log additionally has tiny notes regarding reservations etc. Since no pointers exist regarding recording text, ambiguous feelings or impressions square measure typically enclosed. Care staff bear in mind or take notes regarding what their patients say whereas operating and later input them into the EMR.

There square measure four recording categories: subjective information (S), objective information (O), assessment (A), and plans (P).

- (1)S: info directly gleaned from patients.
- (2)O: objective facts and observations regarding the patient’s look or state by co-medicals.
- (3)A: evaluations and judgments derived from this info.
- (4)P: future plans and care really taken.

The care life log, that records the care activities practiced by nurses, contains several notes regarding nursing processes. It helps guarantee top quality nursing and evaluates nursing practices.

IV. TEXT data processing APPLICATION TO medication

Text data processing is commonly wont to analyze info hidden within the text of a document and to extract key words, phrases, and even ideas from written documents. Text data processing or data processing, that is roughly resembling text analytics, refers to the method of etymologizing high-quality info from texts.

Text data processing typically structures the input text (often by parsing, adding derived linguistic options, removing others and insertion into a database), etymologizing patterns inside the structured information and eventually evaluating and decoding the output.

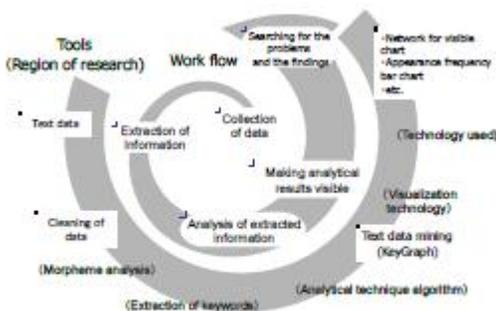


Fig. one shows the method of text data processing. 2 specific aspects ought to be thought-about once applying text data

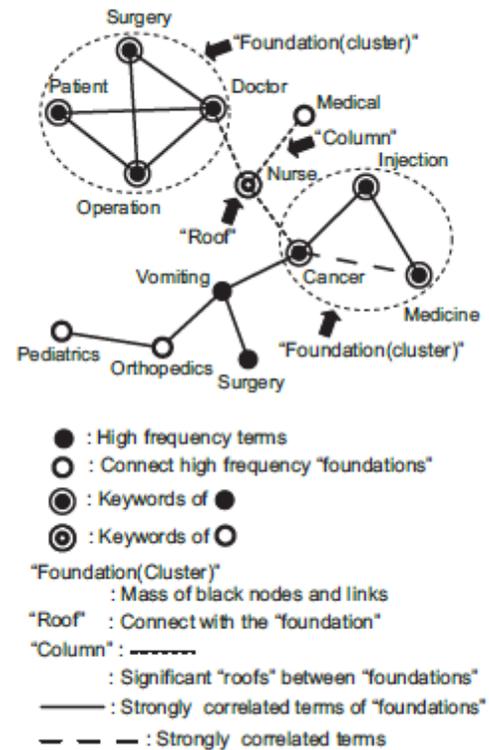
processing to a medical context. Second, final selections may be obtained relating to courses of treatment.

One issue with applying text methoding} to medication is that the entire process of distinctive symptoms for understanding the associated risks whereas taking acceptable action.

V. KEYGRAPH

We applied KeyGraph to the text data mining technique [6], [7]. We also applied it for extracting key words.

A. Example of KeyGraph Performance



- Figure 2 shows an example when it is applied to text data.
- (1)Black nodes indicate things that often occur in a very knowledge set.
 - (2)White nodes indicate the things that occur less often overall however often occur with black nodes in a very knowledge set.
 - (3)Double-circled nodes indicate things whose co-occurrence frequency with black nodes is very high. Double-circled nodes area unit thought-about keywords.
 - (4)Links indicate that the connected item try often co-occurs in a very knowledge set.

(5) Solid lines type a foundation, that dotted lines connect. Foundations, that area unit circles of dotted lines, area unit obtained from the text knowledge. In Fig. 3, 2 foundations have robust linkages with event-sets: , and .

B. define of KeyGraph

Instead of giving an in depth clarification of KeyGraph, we have a tendency to shortly define it here. KeyGraph consists of 3 major elements derived from construction metaphors. every part is delineate as follows:

1) Foundations: sub-graphs of extremely associated and frequent terms that represent basic ideas within the knowledge. A foundation is outlined as a cluster that consists of black nodes coupled by solid lines. The foundations area unit underlying common contexts as a result of they're shaped by a group of things that often co-occur within the knowledge set.

2) Roofs: terms that's extremely related to foundations.

3) Columns: associations between foundations and roofs that area unit used for extracting keywords, i.e., the most ideas within the knowledge. A column could be a line that connects foundations. though the common context diagrammatic by a foundation is wide noted, the context diagrammatic by a column isn't. Columns area unit vital as a result of they connect 2 common contexts in things that don't often occur.

VI. PORFOMACE ANALYSIS RESULTS

In the gift study, to classify the huge quantity of Care Life Log knowledge that happens in nursing in one Miyazaki Hospital long Health Care Facility by level of care needed, text data processing was allotted mistreatment KeyGraph. the subsequent analysis results area unit shown:

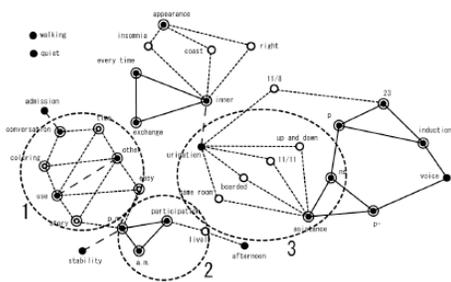


Fig.3 Care life log by the level of care 1 required

(1) Care life log by the level of care 1 required: Fig.3 1) Foundation 1: The caregivers have enjoyable conversations with others while using a coloring book.

1. Foundation 2: The cared person has been actively taking part in morning and afternoon recreation.

2. Foundation 3: The cared person needs help putt on and commencing trousers furthermore as moving into and out of a chair.

The foundations ar obtained from the text information with event-sets one language, coloring, use, story, easy, time}, a pair of , and three :excretion, assistance, inner, boarded, up and down, same room}.care life log by the level of care 2 required : Fig.4

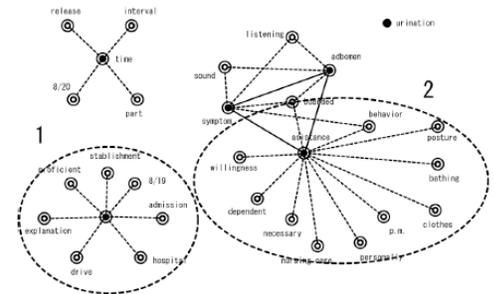


Fig.4 Care life log by the level of care 2 required

1) Foundation 1: Cared person was admitted during a chair from the hospital.

2) Foundation 2: They need help golf shot on and starting up wear, however exhibit AN perspective and temperament to perform the task by them.

The foundations square measure obtained from the text knowledge with event-sets one institution, hospital, admission, explanation}, two medical care, personally, temperament, removable, dependent}.care life log by the level of care 3 required : Fig.5

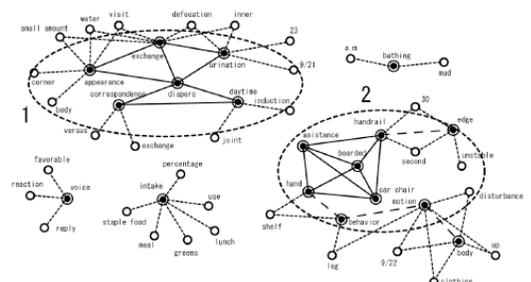


Fig.5 Care life log by the level of care 3 required

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[7] Y. Ohsawa, Benson Nels E and M. Yachida, "KeyGraph: Automatic Indexing by Co-occurrence Graph based on Building Construction Metaphor," Fifth International Forum on Research and Technology Advances in Digital Libraries (ADL'98), 1998.