TRAUMATIC BRAIN INJURY PREDICTION AND MONITORING SYSTEM OF PATIENTS

SHUBHI MISHRA
BE student
(DIT,Pune)

NITA MANJARE
BE student
(DIT,Pune)

DHANASHREE PANDE
BE student
(DIT,Pune)

DIPALI NANWARE
BE student
(DIT,Pune)

Prof. CHAYA JADHAV
Faculty
(DIT,Pune)

Abstract — Traumatic brain injury TBI is one among the foremost common varieties of Neurotrauma that has affected quite 250,000 military service members over the last decade alone. Where as in battle, service members WHO expertise TBI area unit at vital risk for the event of traditional TBI symptoms, likewise as risk for the event of psychological disorders like Post-Traumatic Stress Disorder PTSD. As such, these service members usually need intense bouts of medication and medical care so as to resume full return-to-duty standing. The first aim of this study is to spot the link between the administration of specific medications and reductions in symptomatology like headaches, dizziness, or light-headedness. Service members diagnosed with mTBI and seen at the Concussion Restoration Care Center CRCC in Asian nation were analyzed in keeping with prescribed medications and symptomatology. Here, we tend to demonstrate that in such things with thin labels and tiny feature sets, classic analytic techniques like supplying regression, support vector machines, naïve Bayes, random forest, call trees, and k-nearest neighbor don’t seem to be like minded for the prediction of outcomes. We tend to attribute our findings many to many problems inherent to the present downside setting and discuss several blessings of spectral graph ways.

Keywords: Graphcuts, fMRI, Application

I. INTRODUCTION
Evidence based decision making is seen as one of the central goals for healthcare transformation in the coming decade. Due to innovative advances in biomedical techniques such as genome sequencing, protein identification, medical imaging, and the use of secondary patient information, tremendous amounts of Electronic Health Data (EHD) are generated every day. A primary aim of this paper is to illustrate some of the limitations in using classic parametric analytic techniques in identifying relationships among treatments and patient outcomes in the context of TBI/PTSD applications. Here, we introduce a graph theoretic approach for analyzing EHD to investigate the relationship between medications, neuropsychiatric symptoms, and treatment outcomes and show that when the data is limited, noisy, and sparse, that such approaches can outperform a wide variety of machine learning methods, such as logistic regression, in terms of classification accuracy.

II. PROBLEM STATEMENT
To monitor the possibilities of diseases from patients current symptoms matching with the symptoms present in database for early detection of diseases.

III. EXISTING SYSTEM
Earlier we couldn’t predict the symptom, if we find some symptom then we couldn’t find the actual disease. Because same type of symptom comes under different diseases. By facing this major problem we develop our new system to find the solution of a problem.

IV. LITERATURE REVIEW
According to literature survey after studying different IEEE paper, collected some related papers and documents some of the point discussed here:

1. Unified and Contrasting Cuts in Multiple Graphs: Application to Medical Imaging Segmentation
Author: Chia-Tung Kuo, et.al.
Description: In this paper we have a tendency to study 2 such questions: i) For assortment[3 set[4 group]} of graphs realize one cut that's smart for all the graphs and ii) for 2 collections of graphs realize one cut that's smart for one collection however poor for the opposite. We have a tendency to show that existing formulations of multi view, agreement and various cut cannot address these queries and instead we offer novel formulations within the spectral clump framework. We have a tendency to judge our approaches on practical resonance imaging (fMRI) knowledge to deal with queries such as: “What common psychological feature network will this cluster of people have?” and “What square measure the variations within the psychological feature networks for these 2 groups?” we have a tendency to get helpful results while not the requirement for sturdy domain information.

2. Spectral Clustering for Medical Imaging
Authors: Chia-Tung Kuo, et.al.
Description: In this paper we have a tendency to commit to alter the method of Laplacian creation with the assistance of steering towards the applying focus. In most domains making a basic Laplacian is plausible, thus we have a tendency to propose adjusting this given Laplacian by discovering vital nodes. We have a tendency to formulate this drawback as associate number linear program with an explicit
3. Effects of Low-Level Blast Exposure on the Nervous System: Is There Really a Controversy?
Authors: Gregory A. Elder, et.al.
Description: We review blast injury modeling in animals noting that inconsistencies in experimental approach have contributed to uncertainty over the consequences of low-level blast. Yet, animal studies show that low-level blast pressure waves are transmitted to the brain. In brain, low-level blast exposures cause activity, organic chemistry, pathological, and physiological effects on the system as well as the induction of PTSD-related activity traits within the absence of a psychological agent. We tend to review the connection of blast exposure to chronic neurodegenerative diseases noting the self-contradictory lowering of a beta by blast that at the side of different observations counsel TBI is distinct from non-blast TBI. Human neuroimaging studies show that blast-related mTBI is related to a spread of chronic effects that are unlikely to be explained by co-morbid anxiety disorder. We tend to conclude that rife proof supports low-level blast as having semi permanent effects on the system.

4. Anam4 tbi reaction time-based tests have prognostic utility for acute concussion
Author: LT Jacob N. Norris, et.al.
Description: The Concussion Restoration Care Center has used the automatic psychological science Assessment Metrics version four Traumatic Brain Injury (ANAM4 TBI) battery in clinical assessment of concussion. The study's aim is to judge the prognostic utility of the ANAM4 TBI. In one hundred sixty five concussed active duty personnel (all ultimately came back to duty) seen and tested on the ANAM4 TBI on days three and five (median times) from their injury, Spearman's ρ statistics showed that each one performance subtests (at day 5) were related to fewer days return-to-duty (RTD) time, whereas concussion history or age didn't. Loss of consciousness, and post-traumatic state of mind were related to accrued RTD time; ANAM4 TBI reaction time-based subtests, conjointly, showed the most important impact sizes. A survival analysis employing a Kaplan–Meier plot showed that the bottom twenty fifth on the reaction time-based subtests had a median RTD time of nineteen days, whereas those within the higher twenty fifth had a median RTD time of roughly seven days. Results indicate that till valid neuro psychological feature testing is introduced, the ANAM4 TBI battery, particularly reaction time-based tests, has prognostic utility.

V. MATHEMATICAL MODEL

\[ H(P_1:S_1,S_2,S_3,S_4:D), (P_2:S_1,S_2,S_3:D), (P_3:S_1,S_2,S_3,S_4:D) \]
\[ I_G, U \]
\[ G \text{ set of current symptom in user } U \text{ } g_1, g_2, g_3, g_4 \]
Processing: Using Greedy approach
O set of possible output Extract keyword kn from gn
1) Match kn into H set.
2) If match found
3) If Sn belongs to Pn
   Add Pn into O.
   Perform steps 1 and 2 for Sn is empty for Pn
   From set O,
   For each P check value of D.
   Show result set of D to user U.

VI. EXISTING SYSTEM

Earlier we couldn’t predict the symptom, if we find some symptom then we couldn’t find the actual disease. Because same type of symptom comes under different diseases. By facing this major problem we develop our new system to find the solution of a problem.

VII. PROPOSE SYSTEM

In Propose system we introduce a graph theoretic approach for analyzing EHD to investigate the relationship between medications, neuropsychiatric symptoms, and treatment outcomes and show that when the data is limited, noisy, and sparse, that such approaches can outperform a wide variety of machine learning methods, such as logistic regression, in terms of classification accuracy. We illustrate the robustness of a graph-based representation of the dataset to develop predictive models of patient outcomes.
VIII. SYSTEM ARCHITECTURE

![System Architecture Diagram]

Figure 5.1 System Architecture

IX. RESULT

![Result Image]

Figure 6.1 Result

X. APPLICATION
Health record system

XI. CONCLUSION AND FUTURE SCOPE
We generate System which is use for find out possibilities of diseases from users current symptoms matching with other patients positive disease history with symptom. Propose system offered a different approach that focused on the use of graphs as a means to model complexities between patient symptoms and treatment outcomes. Of course, there represent other possible approaches to representing these types of data and future research should continue to explore the extent to which these approaches provide for accurate classification especially in those cases with sparse data.

XII. REFERENCES
[1] Chia-Tung Kuo, et.al. Unified and Contrasting Cuts in Multiple Graphs: Application to Medical Imaging Segmentation
[13] Chia-Tung Kuo, Peter B. Walker, Owen Carmichael, Spectral Clustering for Medical Imaging, Data Mining (ICDM)