**GLOBAL ACADEMY OF TECHNOLOGY**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING** (Accredited by NBA 2019-2022)

**Rajarajeshwari Nagar, Bengaluru – 560 098**

**Academic Year: 2019 - 20**

**PROJECT SYNOPSIS**

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| **Subject Name** | **Project Work** | **Subject Code** | | **15CSP78** |
| **Student Name** | PRAVEEN V | **USN** | | 1GA16CS101 |
| YASHAS C R | 1GA16CS182 |
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| SNEHA SURENDRA | 1GA16CS198 |
| **Domain** | DEEP LEARNING | **Group No:** | 53 | |
| **Project Title** | “EXPERT SYSTEM ON DIFFERENTIAL DIAGNOSIS USING DEEP LEARNING” | | | |
| **Under taken at** | GLOBAL ACADEMY OF TECHNOLOGY | | | |
| **Guide Name** | JYOTHI R | | | |

**ABSTRACT:**

Differential diagnosis is a process of differentiating two or more condition which share similar signs or symptoms.  This is based on a knowledge of the pathophysiology of the presenting signs and symptoms, and the natural history of various diseases and their causative agents. This process becomes cumbersome when the symptoms and patients history is complex. The challenges faced in differential diagnosis are diagnosing the disease of the patient’s golden time and also keeping in account the vast knowledge of the symptoms.

Considering the above challenges in differential diagnosis we try to overcome them using machine learning. We create a knowledge base required for diagnosing the diseases and collect the patient’s data such as symptoms, history and map it to the most possible diseases. Thus helps in diagnosing faster and narrows down the focus area.

**OBJECTIVES:**

* To set up an environment that records the patient’s history and symptoms and analyses the condition.
* To enhance the analysis and assumptions by feeding the model with more knowledge and narrow down the focus area.
* And finally, to predict the final list of possible diseases and probability of those diseases occurring.

**INTRODUCTION ABOUT THE DOMAIN:**

* Deep learning is an artificial intelligence function that imitates the workings of the human brain in processing data and creating patterns for use in decision making.
* Machine Learning algorithms cannot handle data with high dimensionality.
* The drawbacks of Machine learning has led to Deep Learning.
* Deep learning overcomes the problem of handling high dimensionality data and it can choose the most optimal data for the prediction.
* Neural network helps in understanding the underlying relationships among the symptoms and map it to the most probable diseases.
* The concept of neural network is derived from the neurons present in the human brain.
* The neuron receptors receive the senses from dendrites which is then processed in the nucleus then it is passed to the axons and the decisions are then taken by the brain.
* This concept is adopted in the form of algorithm where the input is the series of data, each data will have a corresponding weight which is then sent to the summation function, if the summation function crosses the threshold in the sigmoid function.
* The predicted output is compared to the actual output and accordingly the weight is altered.
* In this project the symptoms of patients are considered as the input of the first hidden layer in the neural networks, the next hidden layer will be the will be the patient’s history and so on until the desired predicted value or the disease is obtained.
* If the data is insufficient then the tests to be taken will be recommended to the patient so the next hidden layer will be the lab reports for further mapping.

**REQUIREMENT SPECIFICATION:**

**Minimum Hardware Requirement specification**:

Processor: Intel i7-8750H CPU @ 2.20GHz

RAM: 8.00 GB

Hard Disk: 1 Tb

**Minimum Software Requirement Specification**:

Operating system: Windows 10

Softwares: Anaconda, Jupyter Notebook, Tensor flow, Keras.

**Signature of Students Signature of Guide**