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|  | **Sri Lanka Institute of Information Technology** |

Project Topic Assessment – 2018

Research Problem:

There are many software products which we are using in everyday life. These software products are intended to assist the users or in fact for the humans to work with computer hardware in an effective manner. We have seen that sometimes these software products are really difficult to work with when it comes to busy, critical clinical environments. Users of these systems are often doctors, nurses, physicians who have many patients to visit in a limited time slot. Therefore, it is much valuable if the software products they use can be help them to save time for them.

Most software products that are using in the clinical environments has more data which needs to be filled out accurately by the users who enter the data into these systems. We have been informed that most of these people has to fill out many data selections when it comes to recording a particular event that has been performing to a patient that they get to visit. Sometimes it could group up multiple dropdown lists that each has around 50-100 values which they need to scroll-down and select the correct. These dropdown list values can grow depending on the scale of the clinical environments. Almost all the software products has large amount of data, which leads to this hazard for the users. We identified that this consumes a considerable amount of time to work with these software products.

Research Area:

There are many research areas involved with this project including, but not limited to, machine learning, distributed systems and data mining. All these three areas has major part of this project.

Machine learning component has a critical impact on this software product. Choosing the most relevant algorithms in order to build the model and make a decent prediction is a very important aspect.

Communication between existing software is a challenging task as the integration has to be with the minimum level code changes while making sure that the fast data exchange while maintaining the interoperability. This need to be researched with multiple options and select the suitable approach for communication.

Solution proposed:

As for the above mentioned real world problem when dealing with software products in clinical environments, it would be better that if those dropdown lists are being automatically sorted to the values which are highly likely to be selected by the user. This feature is actually helping to improve the efficiency of many healthcare professionals to save their time to input the data to the system while letting them more time to observe more on their patients. In fact the users find it pleased to work on such software products which assist the users in an elegant way.

We came up with an idea to make a separate software product which can tackle that problem and solve with that aid of artificial intelligence. This software product is targeted to be use as an integrated software which can assist the users with the help of the AI. There are few challenges like the integration with minimum software coupling, increasing the accuracy level of predictions etc. At the heart of this software there is a machine learning model which is capable of selecting the most appropriate value and sort the rest of the values depending on the user’s behavior patterns. With this approach the existing software products and simply communicate with this new software solution whenever populating a dropdown list which has lot of values in it. This is a very innovative software solution which in fact requesting by many users of cosmic (healthcare product used by thousands of clinical environments in Swedish hospitals). Our software solution will include an analytical component which the administrators in the hospitals can monitor the accuracy of predictions. This software solution is not limited to cosmic software, but it will be written in a way so that other vendors could also make the best out this product.

Technologies to be used:

To build machine learning models and neural network

* Keras
* Python pandas, Scikit

To build the dashboard view with statistical information about the sorting

* D3.js
* Angular

Integration with existing softwares (depending on the research outcome of this area)

* Spring
* SQL
* Java EJB

Team Members:

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* **For official use only**

Acceptable: YES/NO

Changes proposed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Any other Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Approved by CDAP Group:

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