**Formulary – A Smart dictionary of formulas**

**Abstract**

We come through many formulae in our education courses, software development, Banking and finance and other corporate businesses. Remembering them is a big task. Though many of us know the concept but a slightest of error while writing a formula creates of chain of mistakes.

To solve this issue, we plan to make a Database of Formulas relating different fields which can be used by everyone to refer, learn and teach as well.

We plan not only to make a Dictionary but a Smart Dictionary which will make some excellent use of Artificial Intelligence.

**What are the core problems being resolved?**

1. Memorising and Better Understanding

Problems like memorising various formulae can be tackled. Using various animations and stories of inventors of those formulas (similar to Google Doodle) in our “Formula of the Day” Concept. Also providing a “Learn” tab which will have derivation of a particular formula and alternate formulas for the same.

Better understanding of these formulae so that students can apply them in practicality.

1. Everything at one place

A database which stores Formulae of all fields and provides you with the most accurate results based on your requirements.

1. Who needs calculators?

Creating a software where based on input parameters application displays different formulae applicable for the required output.

**How are you going to resolve them?** **(Which Watson Services are being used?)**

1. Concept Expansion

Concept Expansion analyses text and learns similar terms (words or phrases) based on context. The output can be used to provide further understanding of data and improve text analytics.

This will help in retrieving the best matching formula for particular input and required output.

1. Concept Insights

The Concept Insights service links documents with a pre-existing graph of concepts based on Wikipedia (e.g. ‘General Relativity’, ‘EMI Calculators’,etc.). Users of this service can also search for documents that are relevant to a concept or collection of concepts by exploring the direct and indirect links.

1. Natural Language Classifier

The Natural Language Classifier service applies cognitive computing techniques to return the best matching classes (Formulae) for a sentence or phrase. For example, you submit a question and the service returns keys to the best matching answers or next actions for your application.

1. Relationship Extraction

Parses sentences into their various components and detects relationships between the components. So for inputs like velocity(V) and time(t) user can have outputs for displacement(S), distance (d) and acceleration(a).

1. Retrieve and Rank

The IBM Watson Retrieve and Rank service helps users find the most relevant information for their query by using a combination of search and machine learning algorithms to detect "signals" in the data.

1. Text to speech

We can use this feature to get pronunciations of various Greek alphabets.

**What in the prototype is Doable?**

Each and everything mentioned above is doable.

With our Limited knowledge at this stage, not everything mentioned is implemented currently. Although in near future we plan to build on this idea and work hard to realize it. We have tried our best to implement few features like,

1. Basic Coding of Formulae and display of Relevant links of concepts and video explanation.
2. Display of different tabs for formulae and calculators for Mathematics, Physics, Chemistry and Banking.
3. Simple Blogging page for interaction and Questions/Answers with other Students and experts.
4. Forms for suggestion and feedback from users.

The main application will make use of different Watson APIs.

**Realism- How Viable it is?**

This application has a potential to grow in numerous fields and has infinite scope of growth targeting almost every user having access to internet.

Following are some the fields where this application can be used,

1. Education (Primary, Secondary, UG, PG, PhD)
2. Insurance companies, banks and all financial institutions
3. Research and Development Sector
4. All management courses (MBA), Actuary, CFA (Financial Analysts)
5. Broking companies (Share market, Equity related Products)
6. Software Development, Programming and creation of various automation tools
7. Start-ups, Businesses as well as Corporate Companies.

**What impact will it have?**

1. Since it is a daily use app, participation of students will be on a large scale all the time. This will make sponsors invest more in advertising brands.
2. Since its global even foreign investors will be attracted.
3. Scope of revolution in calculation is the main objective of this application.

**Conclusion**

From students to teachers, start-ups to businesses to corporate companies, formulas are the raw material for all. With an infinite scope of growth of this Smart Dictionary we see lot of potential in this field. Also with excellent application of AI we are looking forward to bring about a revolution and formulas fun to learn and play with.

**Team Members**

1. Tejas Ingale
2. Himanshu Rawlani
3. Romit Bonkar
4. Keyur Prabhu