Predictive Analysis

For E-Learning System

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Project Title

Predictive Analysis For E-Learning System

Outline

- The Problem Statement
- Proposed Methodology
- Requirements
- Algorithms & Mathematics
- Result & Output
- Project Timeline
- Future Work

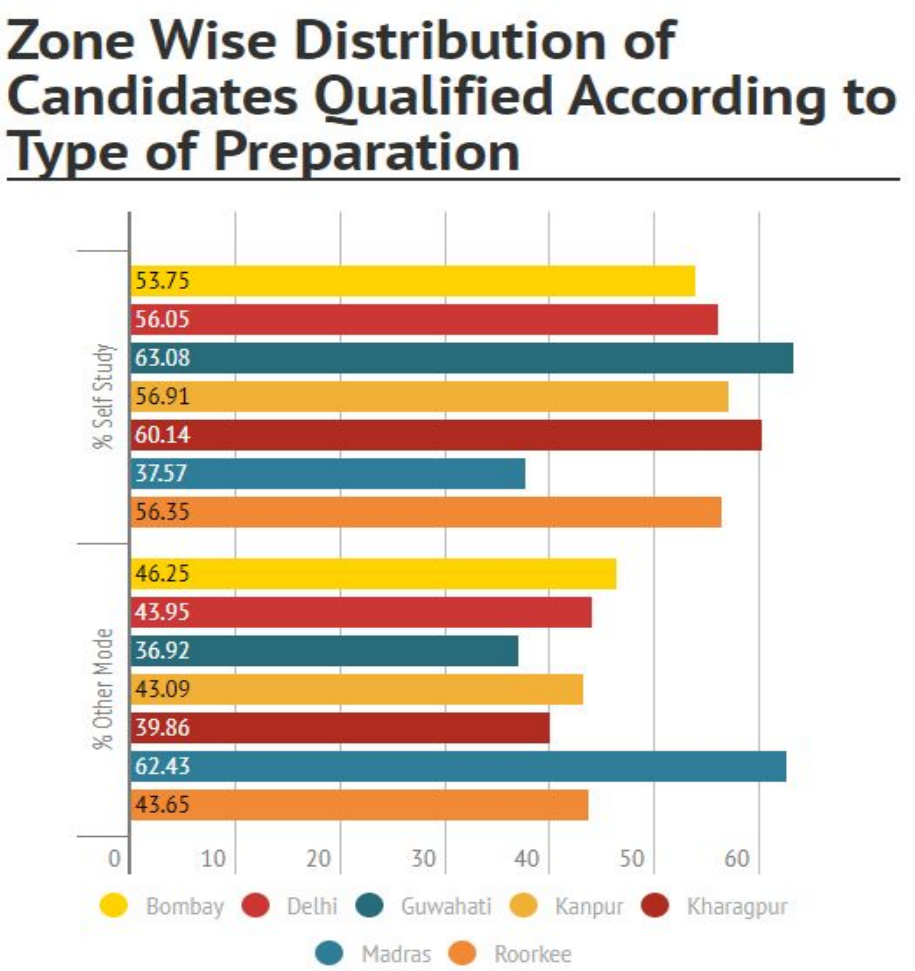
Problem Statement

Unavailability of a platform, which can predict probability of set of relevant questions coming in a future Exam.

Current Scenario

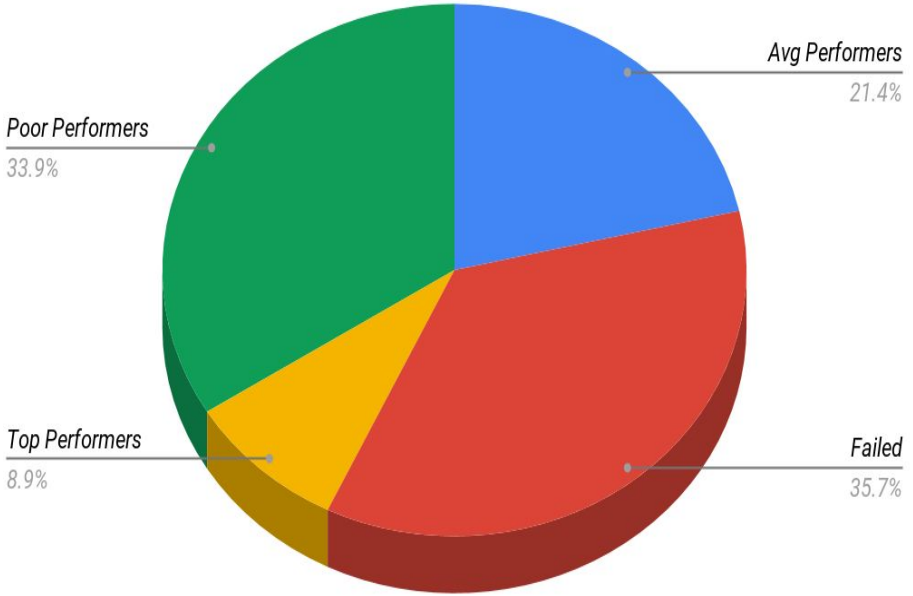
- Number of Students taking JEE exam is around 16 lakh and this number changes each year.Previous year statistics show that student with rank around 25K scores an average of 50% in the exam.
- It shows that out of 16 lakh candidates, around 15.5 lakh students score even less than 50%. Approximately, there are collectively 10K seats in institutes of national importance(like IITs, NITs, IIITs etc.).
- So around 5% candidate manage to get into such prestigious institutes successfully, out of which maximum are those students, who used to prepare in private coaching centres.
- This shows there is a huge neck to neck competition for getting through it. Henceforth, an organized and planned way is required for preparation of such exam. The proposed model aims to address this problem.

Current Scenario



Source: www.engineering.careers360.com

Current Scenario



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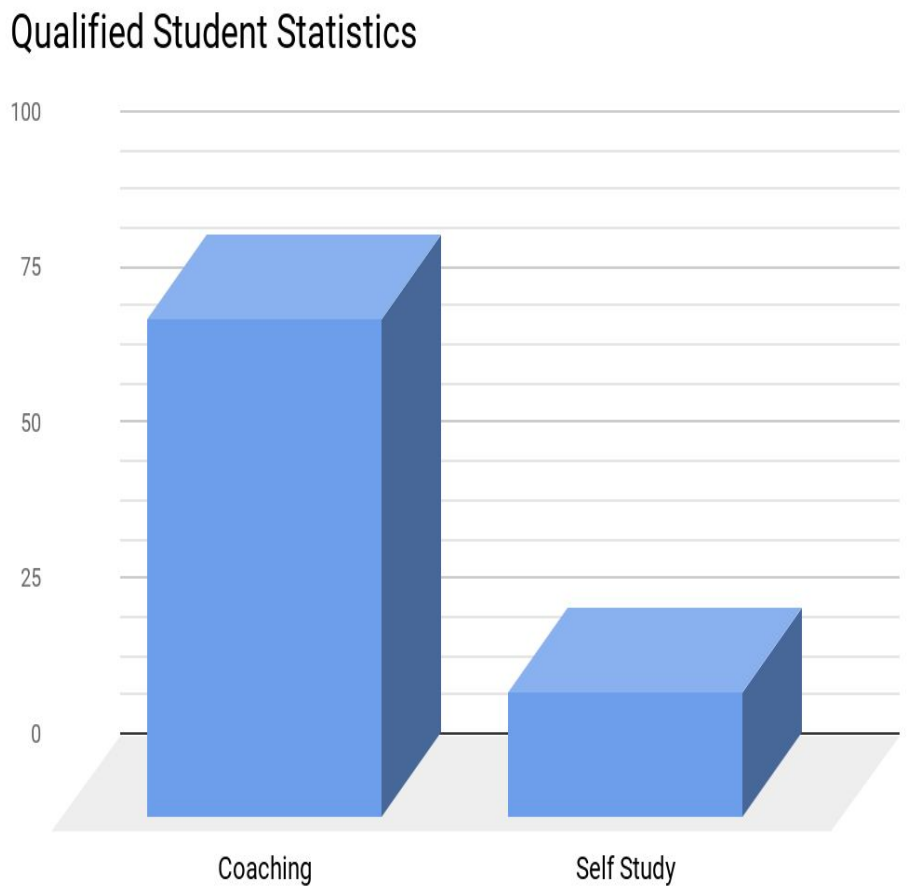

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Solution Proposals

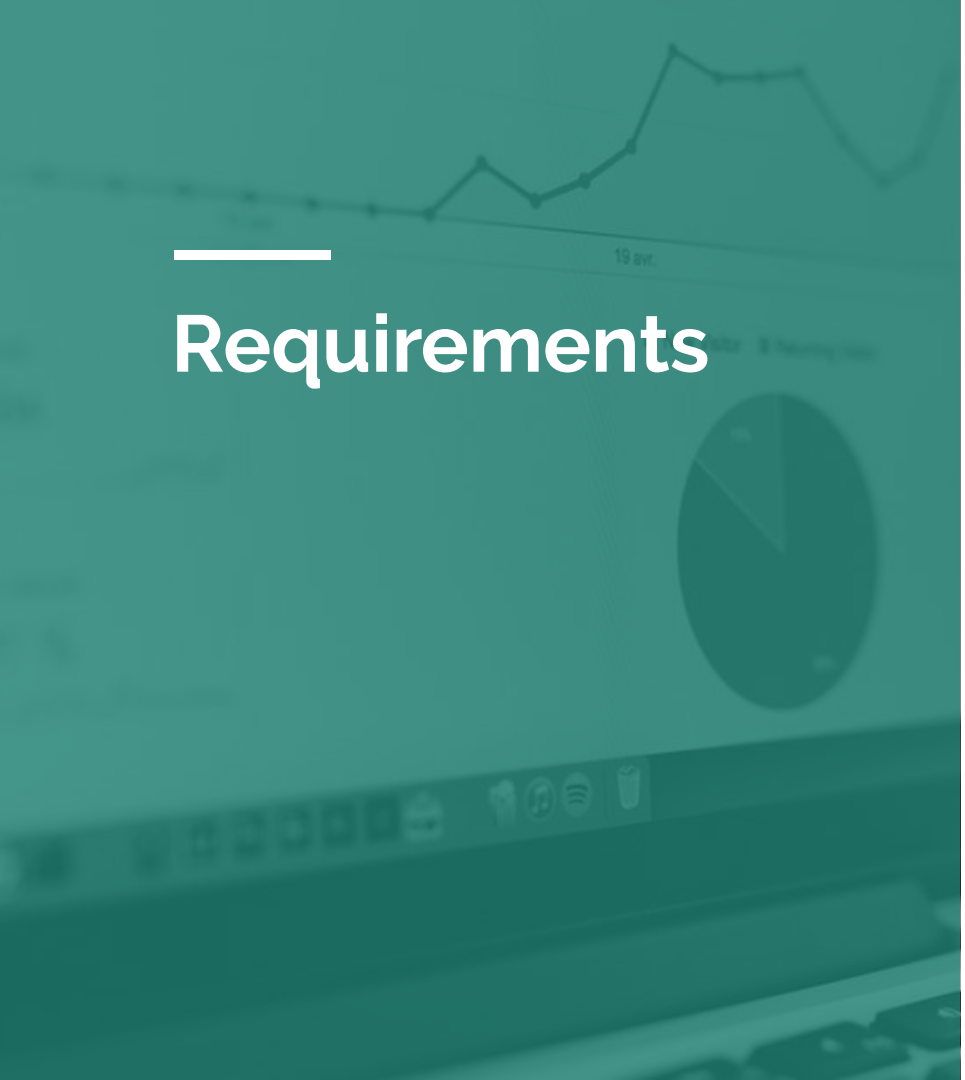
- Given a refined question set user will be asked to select the topic of each subject and based on that a question paper will get generated accordingly.

- ML algorithms and some optimization techniques will be applied on the dataset to generate the questions of higher probability for upcoming entrance exam.

- Graph Visualization techniques will be used to show the questions previous history in which year it occured and also the probability of coming the same question in future.

Use cases / user stories

- ➔ Students can utilize their time practicing question instead of focusing on purchasing books.
- ➔ User will get the feature to practice questions by setting the timer on standard allowed time.
- ➔ Students who give online JEE MAINS and other engineering entrance exam can benefit more from our platform.



Requirements

Methods

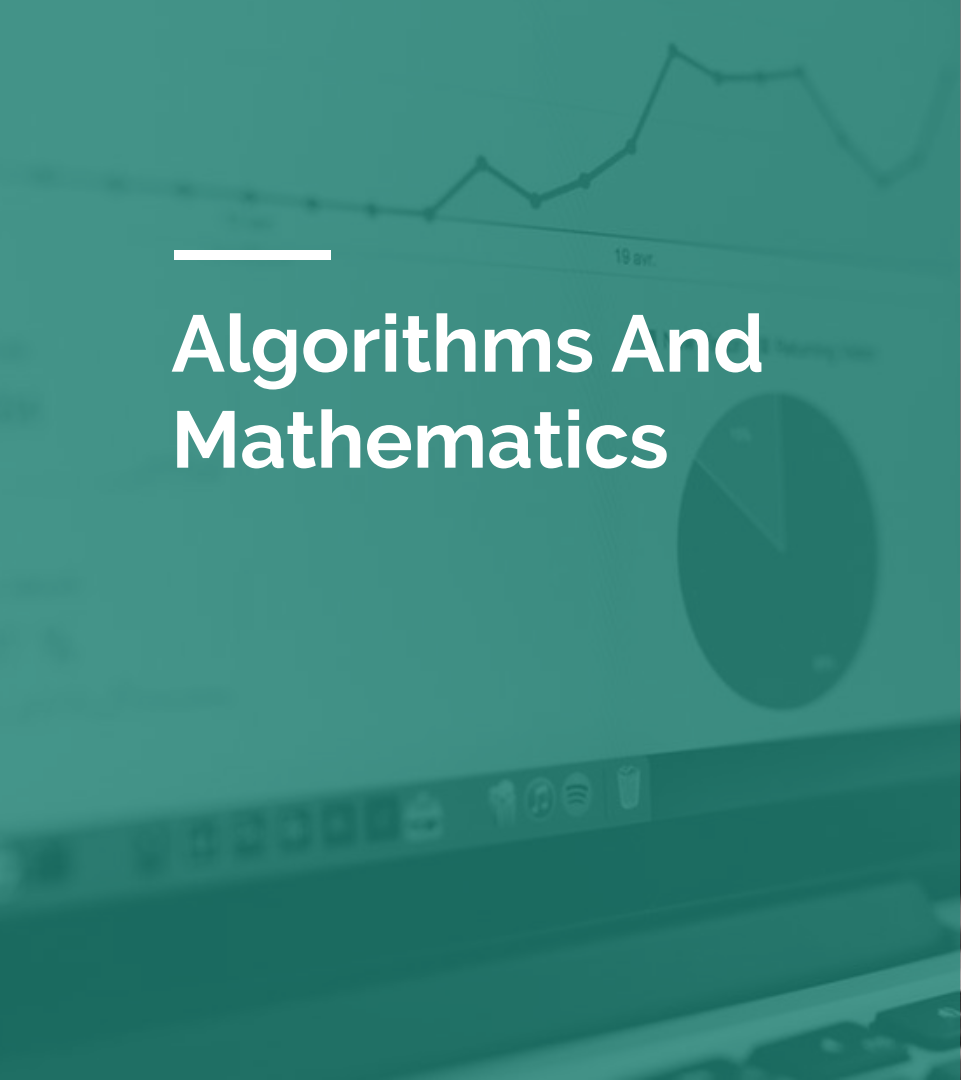
- Clustering
- MLP (Mathematical Language Processing)
- Deep Natural Language Processing Algorithms

Technology

- spaCy
- Matplotlib
- Python 3.7
- Neo4j

Datasets

- Question book in PDF format
- Entrance Exam Website
- Coaching Institute Dataset



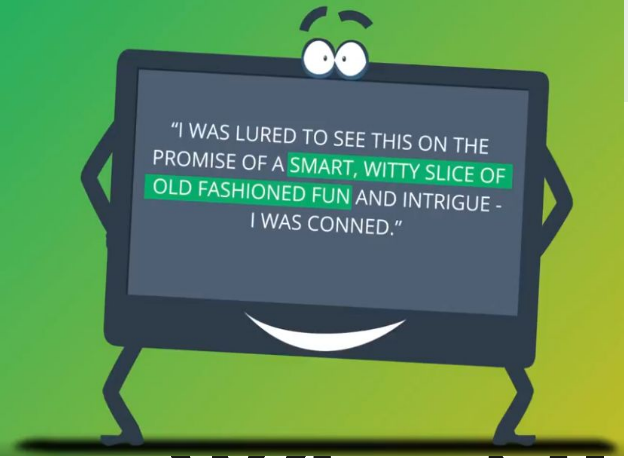
Algorithms And Mathematics

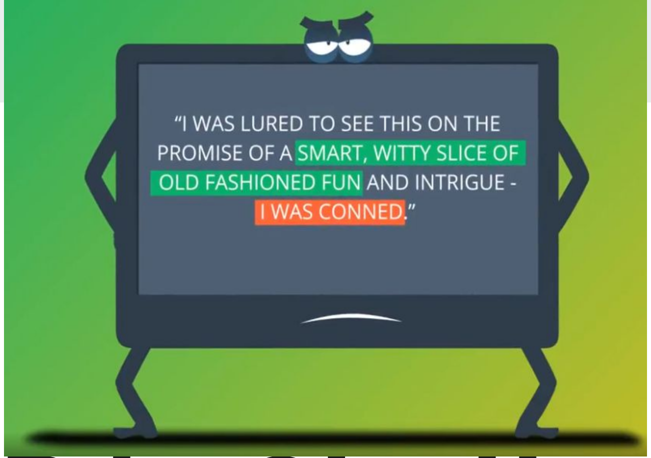
- Probability Theory
  - Bayes Theorem
  - Conditional Probability
- Applied Statistics
  - Bayesian Statistics
  - Frequentist Statistics
  - Distribution
  - Entropy and Linguistics
- Deep Learning Algorithms
  - SVM
  - RNN
  - LSTM

Impact on real World

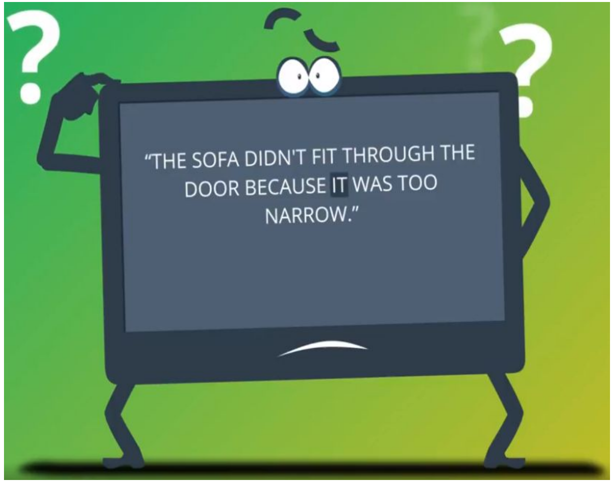
- It will help those students who are from weak financial backgrounds, who are not able to get a quality education

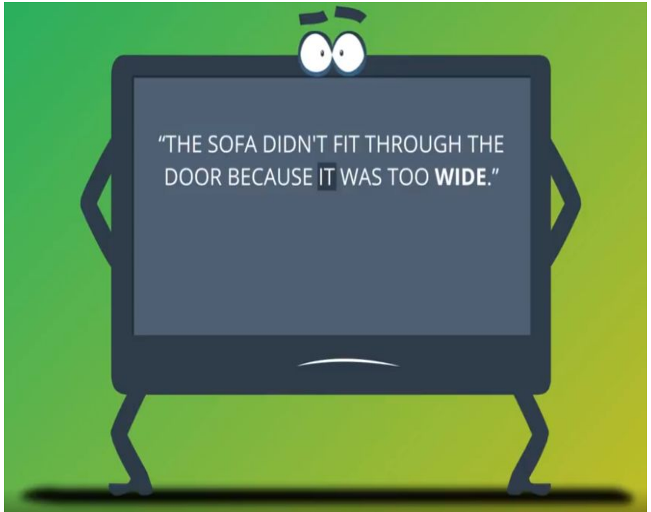
- This project will help to bring down the coaching culture, which is highly prevalent in our society because education is not an entity which one can get only by spending hefty amounts of money in such coaching centres.





Why NLP is Challenging





Text Processing

Feature Extraction

Modeling

PROCESS WORDS & PHRASES

KEYWORDS
PARTS OF SPEECH
NAMED ENTITIES
DATES & QUANTITIES

PARSE SENTENCES

STATEMENTS
QUESTIONS
INSTRUCTIONS

ANALYZE DOCUMENTS

FREQUENT & RARE WORDS
TONE & SENTIMENT
DOCUMENT CLUSTERING

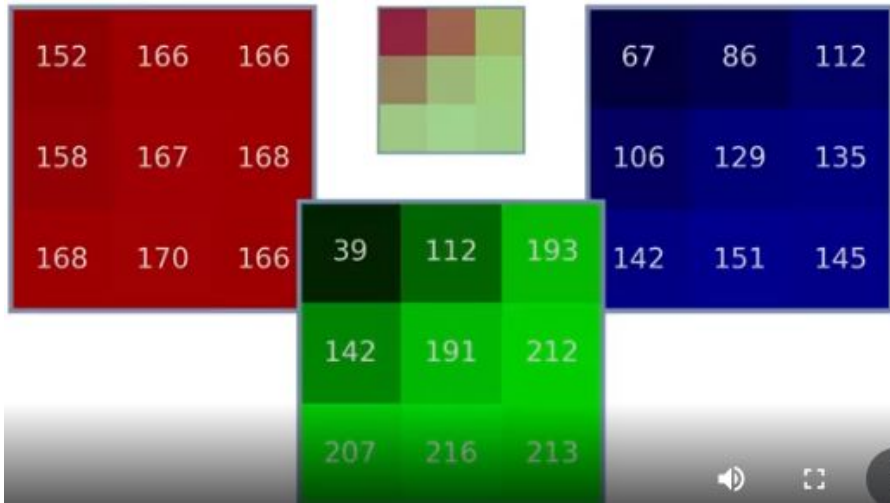
A B C

65 66 67

fox jump dog

? ? ?

fox jump dog



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0.1	0.6	0.2
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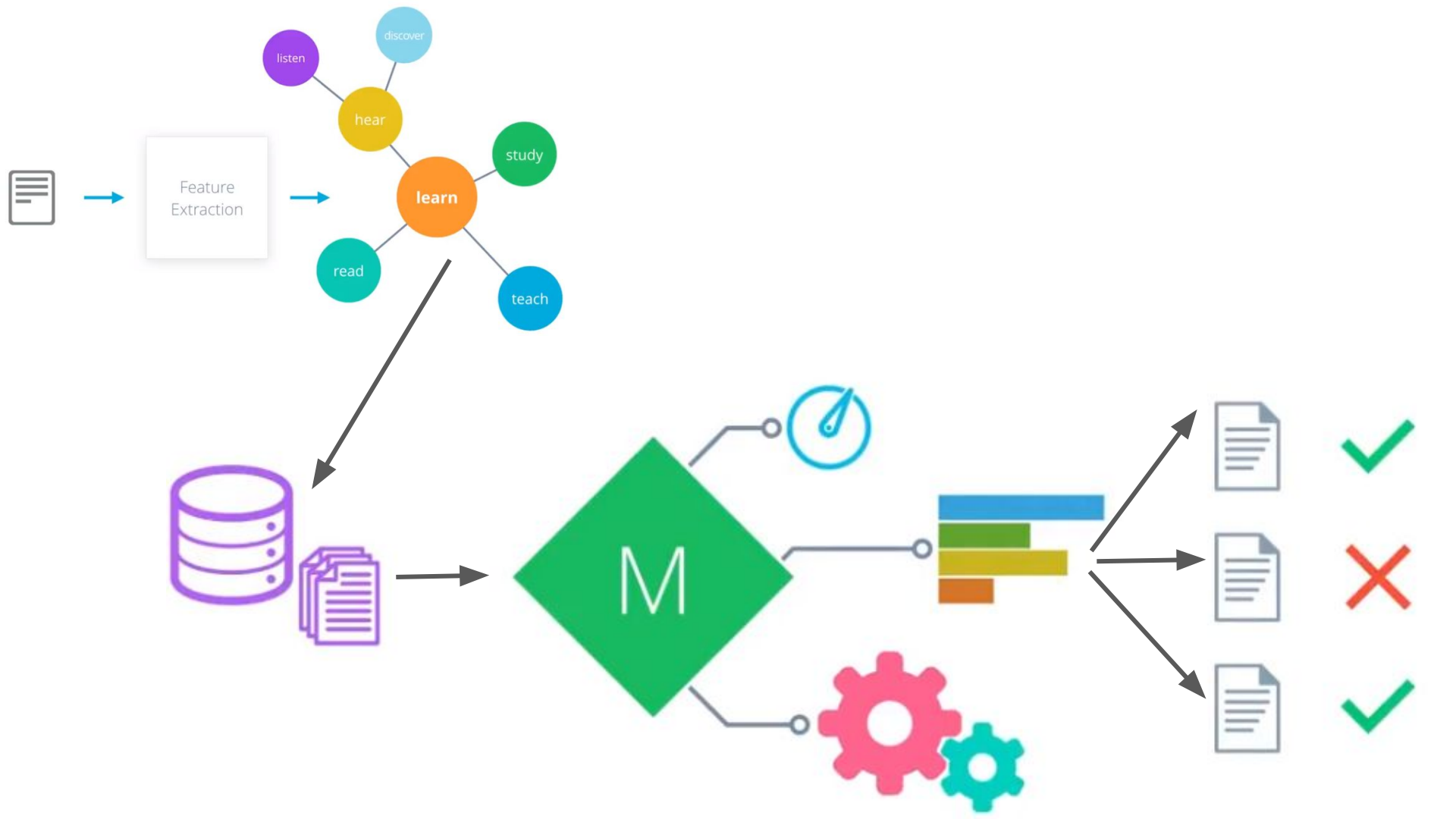
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study
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Feature
Extraction
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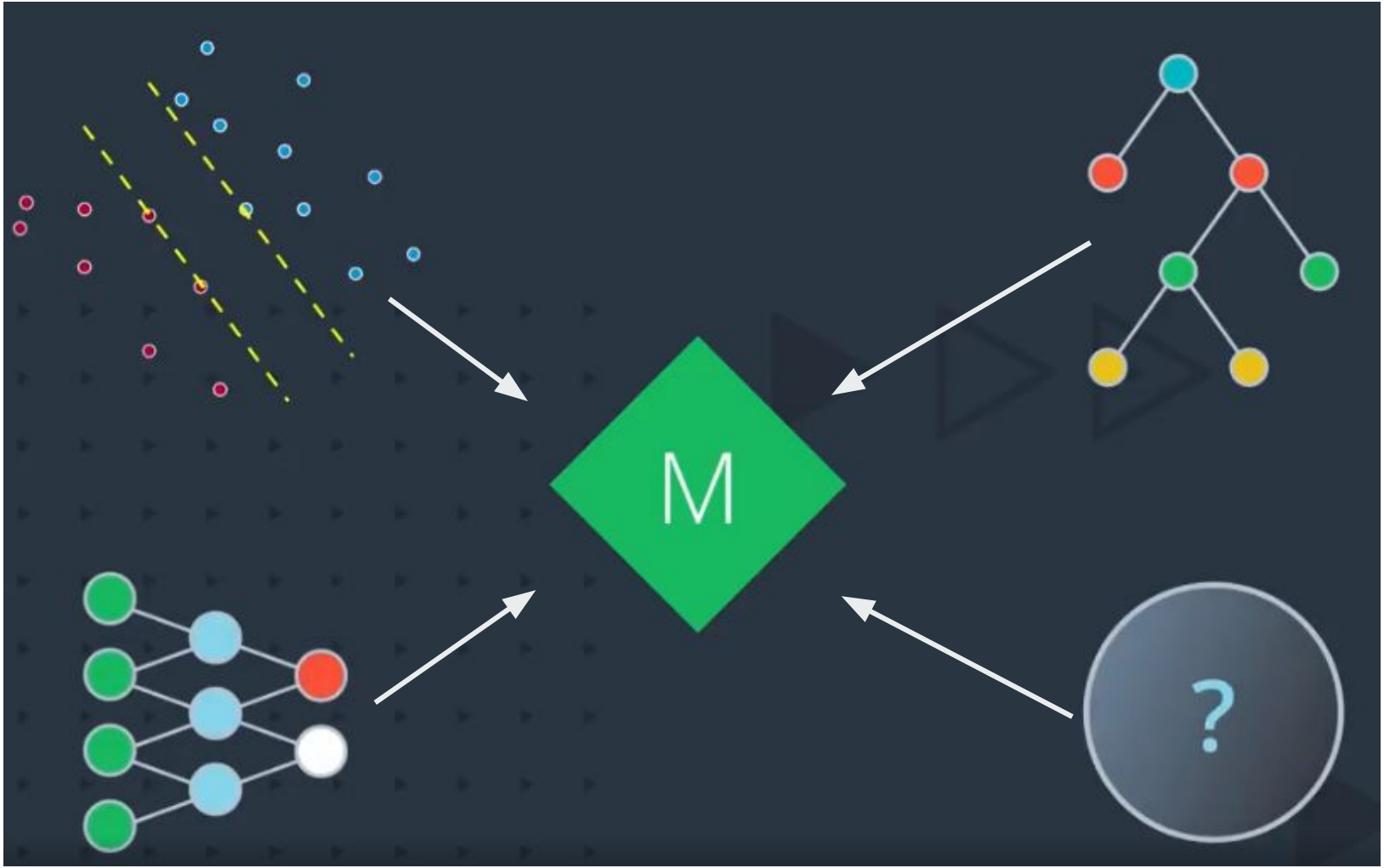
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Future Work

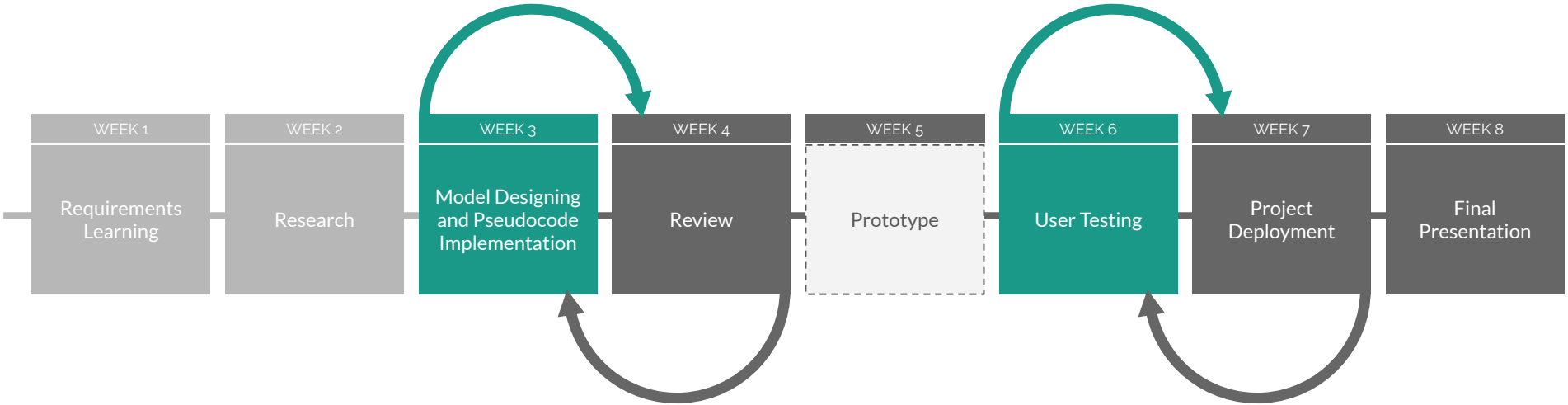
- Incorporating the project in a fully functional website.
- De Facto Standard For Question Search Engine For Entrance Exam using Elasticsearch Technology.
- Making it as much interactive as possible.
- Applying Big Data Analytics.

What next?

➔ Implementation Plan & Project Timeline.

➔ User Interface & User Experience.

Implementation Plan & Project Timeline



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[2]. Rajpurkar, Pranav, et al. "Squad: 100,000+ questions for machine comprehension of text." *arXiv preprint arXiv:1606.05250* (2016).

[3]. Mostafazadeh, Nasrin, et al. "A corpus and evaluation framework for deeper understanding of commonsense stories." *arXiv preprint arXiv:1604.01696* (2016).

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Thank You