

Task Discussion

Project Phase review

Solution Concept

UI Prototype

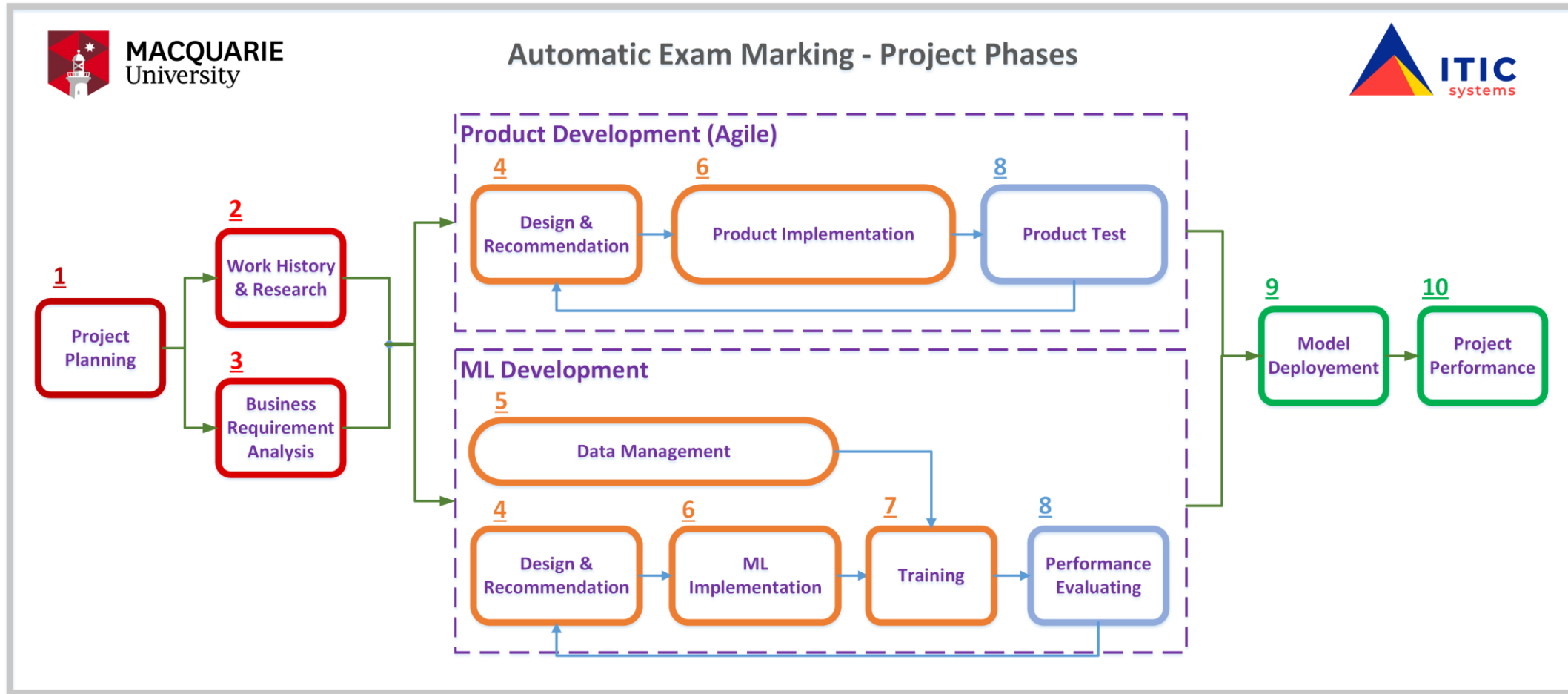
chatGPT

Rubric Generation

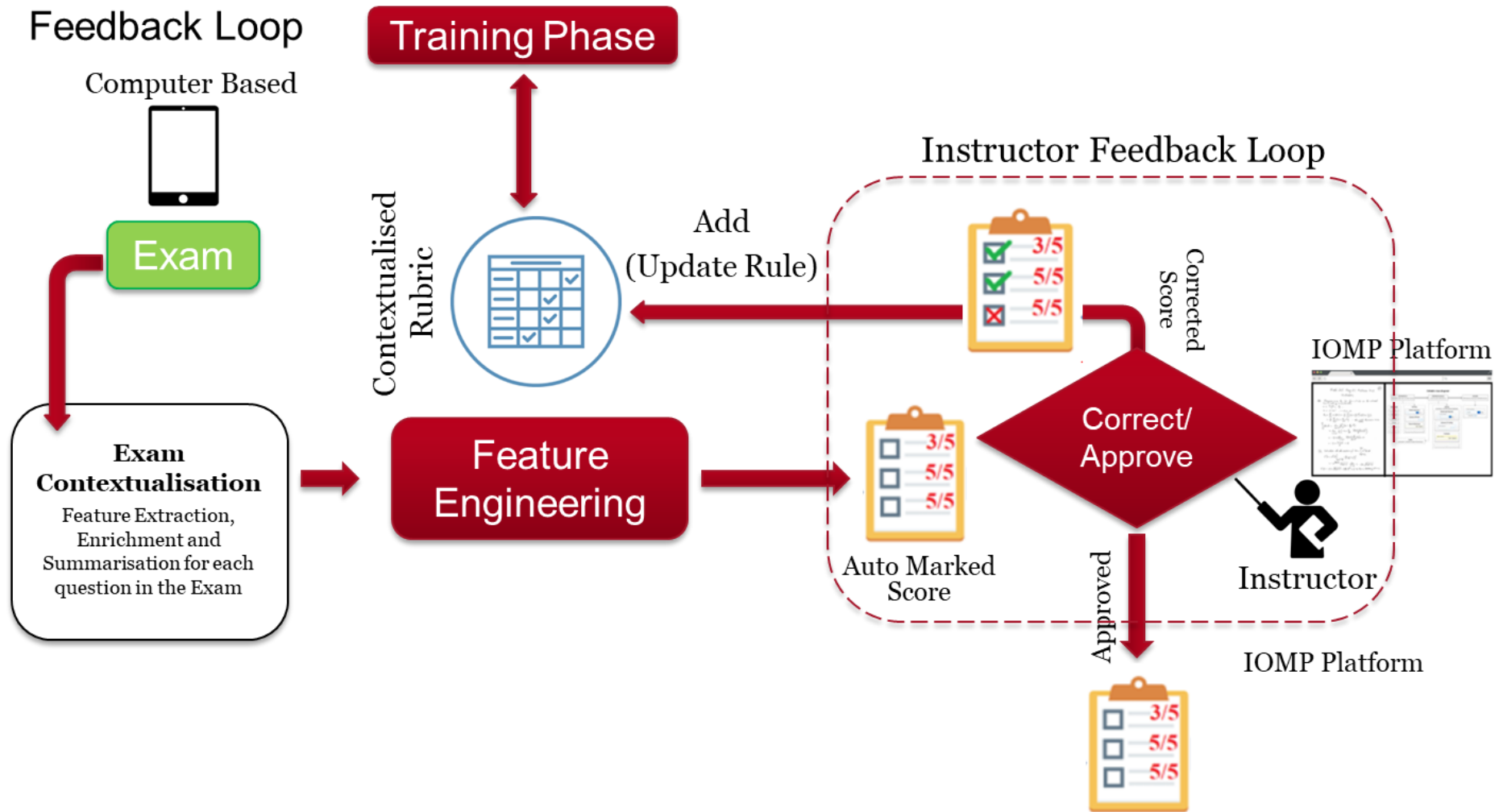
API Integration



Project Team Structure



Solution Concept



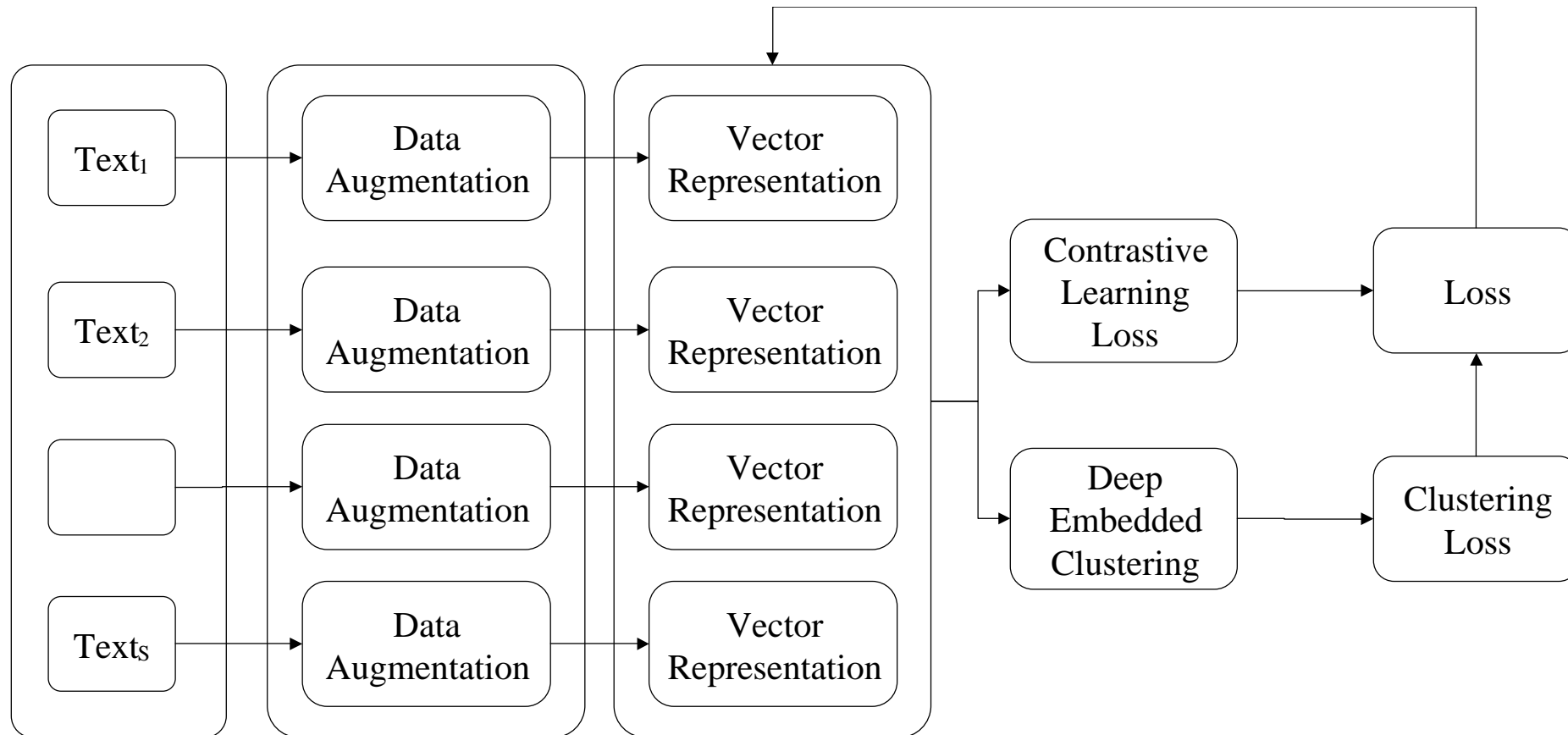
Key Solution Components

Rubric - the initial interaction point to set up an exam

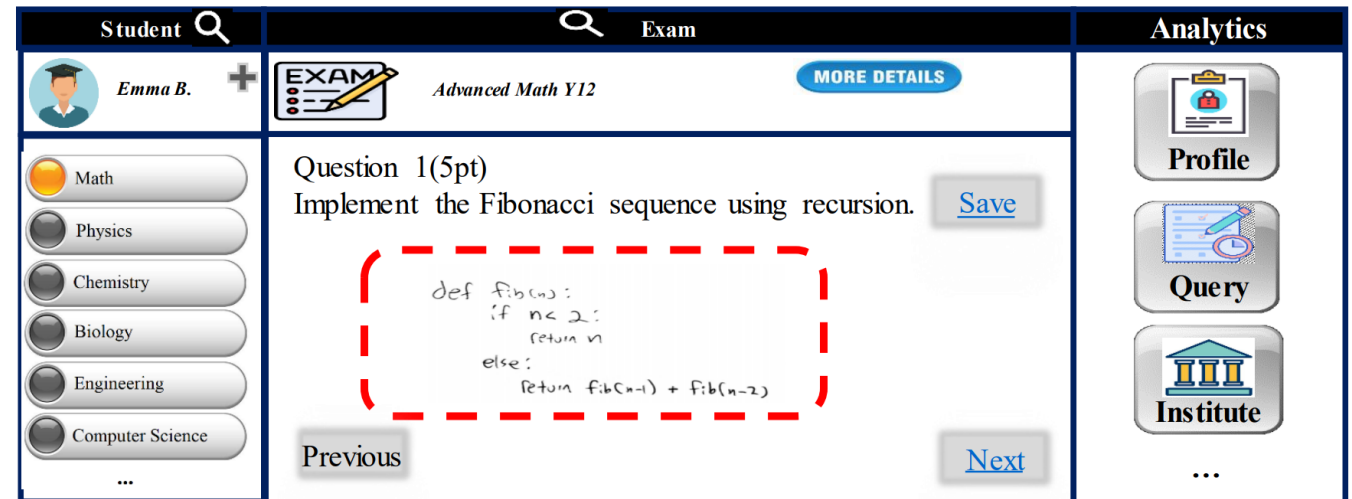
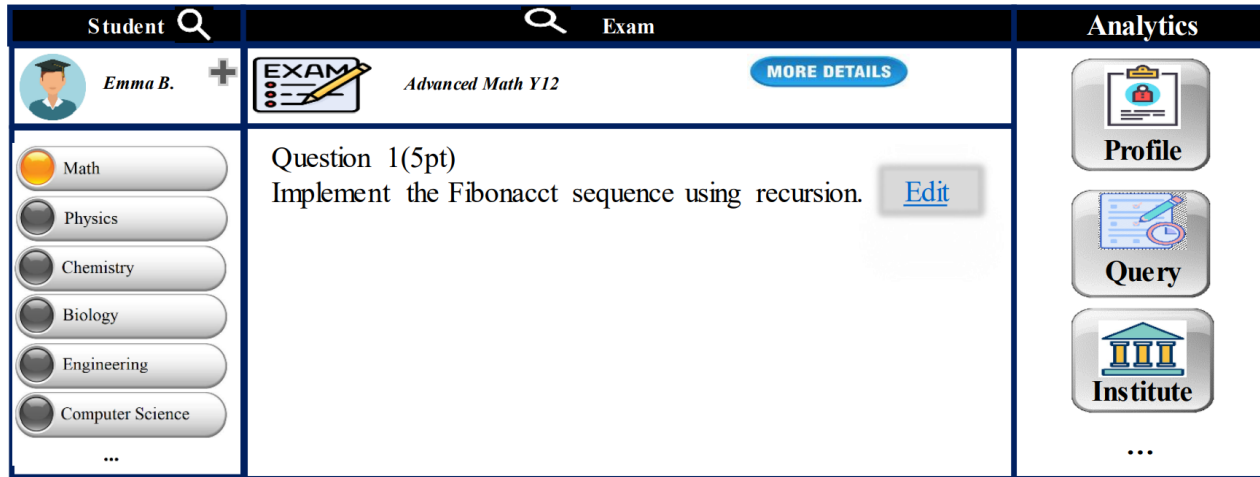
Feature extraction - learns a set of features from instructors while marking students' works

Training model - trains a graph-based model for marking students' works



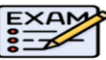



Proposed Framework



Prototype - Student Portal



Prototype - Student Portal

Instructor	Exam	Rubric
 Anna A. 	 Advanced Math Y12 MORE DETAILS	 Math Rubric/Score
<div><div>Math</div><div>Physics</div><div>Chemistry</div><div>Biology</div><div>Engineering</div><div>Computer Science</div><div>...</div></div>	<p>Question 1</p> <p>Implement the Fibonacci sequence using recursion.</p> <pre>def fib(n): if n < 2: return n else: return fib(n-1) + fib(n-2)</pre>	<p>Total Points 5.0/5.0</p> <p>Rubric Settings  Collapse view </p> <p>+ Add Rubric Items</p>

Rubric Options

Set rubric options for the question








Rubric Type

- ☒ Negative Scoring (Points are subtracted from 5.0)
- ☐ Positive Scoring (Points are added to 0)

Score Bounds

- ☒ Ceiling (Maximum score is 5.0)
- ☒ Floor (Minimum score is 0.0)

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Instructor	Exam	Rubric
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<div><div>Math</div><div>Physics</div><div>Chemistry</div><div>Biology</div><div>Engineering</div><div>Computer Science</div><div>...</div></div>	<p>Question 1</p> <p>Implement the Fibonacci sequence using recursion.</p> <pre>def fib(n): if n < 2: return n else: return fib(n-1) + fib(n-2)</pre>	<p> 1 of 2 graded</p> <p>Total Points 5.0/5.0</p> <p>Rubric Settings  Collapse view </p> <p>1 -0.0 Correct</p> <p>2 -1.0 Do not define Fib</p> <p>3 -2.0 R1: Do not give description when ≤ 2 R2: Do not provide description when $n > 2$</p> <p>+ Add Rubric Items</p>

[Automatic Marking](#)

Chat GPT Question?

How can Generative AI be utilised to build a data set for AI enabled exam marking?

- Collect a diverse set of real exam responses for the exam in question.
- Use the collected responses to train a Generative AI model, such as a Variational Autoencoder (VAE) or Generative Adversarial Network (GAN).
- Generate new, synthetic exam responses using the trained Generative AI model. These synthetic responses should cover a wide range of possible answers that a student might provide.
- Label the synthetic responses based on the grading rubric for the exam, using human experts or a rule-based system. This will create a dataset of synthetic exam responses and their corresponding grades.
- Use this dataset to train an AI model for exam marking. The model can learn to identify common mistakes and patterns in student responses and assign grades accordingly.

Chat GPT Question?

Generate 5 mathematical equations solution with working for postgrad master of data science relating to machine learning algorithms

1. Logistic Regression:

Assuming a sigmoidal relationship between input variables x and output variable y , the equation for logistic regression can be expressed as:

$$y = 1 / (1 + \exp(-(b_0 + b_1 * x_1 + b_2 * x_2 + \dots + b_n * x_n)))$$

where b_0 is the intercept and b_1 to b_n are the coefficients of the input variables. To find the values of the coefficients that best fit the data, the maximum likelihood method is used.

2. Principal Component Analysis (PCA):

Given a dataset with n variables, the goal of PCA is to find a set of m ($m < n$) variables that capture the most variance in the data. The principal components are obtained by performing eigendecomposition on the covariance matrix of the data. The equation for PCA can be expressed as:

$$X = U S V^T$$

where X is the data matrix, U is the matrix of eigenvectors of XX^T , S is the diagonal matrix of eigenvalues of XX^T , and V^T is the transpose of the matrix of eigenvectors of XTX .



Chat GPT Question?

Write 2 questions and answers for post grad level Masters of Data Science on Fibonacci sequence and mathematical equations

1. What is the Fibonacci sequence and what is its mathematical definition?

The Fibonacci sequence is a series of numbers in which each number after the first two is the sum of the two preceding ones. The mathematical definition is: $F(0) = 0$, $F(1) = 1$, and $F(n) = F(n-1) + F(n-2)$ for $n \geq 2$.

2. What is the relationship between the Fibonacci sequence and the golden ratio?

The ratio of any two consecutive Fibonacci numbers approaches the golden ratio, which is approximately 1.6180339887. This relationship has been studied extensively in mathematics and appears in many areas of science and art.

Chat GPT Question?

Write 2 questions and answers for post grad level Masters of Data Science on rubric generation

What are some common approaches to generating rubrics for grading assessments in data science?

There are several approaches to generating rubrics for grading assessments in data science, including using a pre-existing rubric, developing a new rubric based on course objectives and assessment goals, or using a hybrid approach that combines aspects of existing rubrics with new criteria.

How can machine learning techniques be used to generate rubrics for grading assessments in data science?

Machine learning techniques can be used to generate rubrics for grading assessments in data science by training a model on a dataset of graded assessments and corresponding rubrics. The model can learn to identify patterns in the data and suggest criteria for grading based on those patterns. However, it's important to ensure that the rubric generated by the model aligns with course objectives and assessment goals and is reviewed by human experts to ensure its accuracy and validity.

Chat GPT Question?

Generate a 100 question and answer data set of multiple choice questions on Developing Algorithms for post grad level Masters of Data Science

[chat GPT video stored on Google Drive](#)

[chatGPT video local copy](#)

