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TeachMate: AI Powered Student & Teacher Module

Major Project Phase-I Report
(TeachMate Agent)

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CERTIFICATE

This is to certify that the Major Project Stage-1 work titled **"TeachMate Agent"** is carried out by **Suhas M (R20EA107), Kiran D (R20EA071), Rajesh B (R20EA065), Sanjay K (R20EA075),** are bonafide students of Bachelor of Technology in **AIML** at the School of Computing and Information Technology, REVA University, Bangalore in partial fulfillment for the award of degree in Bachelor of Technology in Computer Science and Engineering, during the year **2023-2024**.

Dr. Aruna Kumara B	**Dr. Mallikarjun M Kodabagi**
Professor School of Computing and Information Technology, REVA University Date:	Director School of Computing and Information Technology, REVA University Date:

Name of the Examiner **Signature of Examiner**

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ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

DECLARATION

We, **Suhas M (R20EA107), Kiran D (R20EA071), Rajesh B (R20EA065), Sanjay K (R20EA075),** are students of seventh semester B.Tech in **AIML**, at the **School of Computing and Information Technology, REVA University, Bangalore**, hereby declare that the Major Project Stage-1 titled **"TeachMate Agent"** has been carried out by us and submitted in partial fulfilment for the award of degree in **Bachelor of Technology in Computer Science and Engineering** during the academic year **2023-2024**.

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ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

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First, we take this opportunity to express our sincere gratitude to School of Computing and Information Technology, REVA University for providing us with a great opportunity to pursue our Bachelor's degree in this institution.

It is a matter of immense pleasure to express our sincere thanks to **Dr. Mallikarjun M Kodabagi, Director, REVA University,** for providing right academic guidance that made our task possible.

We would like to thank our guide Prof. Anitha, **Professor**, **School of Computing and Information Technology, REVA University**, for sparing his valuable time to extend help in every step of our project work, which paved the way for smooth progress and fruitful culmination of the project.

We would like to thank our **Project Coordinators Dr. Sindhu Menon and Prof. Pratap M S** and all the staff members of School of Computing and Information Technology for their support.

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We would like to thank one and all who directly or indirectly helped us in the Project work.

Signature of Students
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ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

TABLE OF CONTENTS

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

NOMENCLATURE USED

AI:	Artificial Intelligence
ITS:	Intelligent Tutoring Systems
OCR:	Optical Character Recognition
NLP:	Natural Language Processing
RAG:	Retrieval Augmented Generation

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LIST OF FIGURES

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

ABSTARCT

"TeachMate" represents a transformative project in education, introducing a comprehensive platform that addresses critical challenges in assessment and learning. The system's four primary deliverables redefine the educational experience. Firstly, "Personalized Practice Material" leverages sophisticated algorithms to generate tailored questions and summaries, aligning with individual learning styles for heightened engagement and comprehension. Secondly, the "Efficient Automated Grading" feature employs advanced machine learning and natural language processing to streamline subjective answer evaluations, ensuring both accuracy and fairness while saving educators valuable time. Thirdly, "Data- driven Insights" empower educators with a deep understanding of student performance, facilitating targeted instructional strategies through analytics. Finally, the "Integrated Learning Environment" seamlessly combines these functionalities, creating a centralized hub where personalized practice material, automated grading, and insightful analytics converge. "TeachMate" envisions a holistic approach to education, where personalized learning tools, efficient assessment, and data-driven insights coalesce to enrich both the teaching and learning experience. TeachMate heralds a new era in education, seamlessly blending personalized learning, efficient assessment, and insightful analytics. It envisions a dynamic educational landscape where students receive tailored support, educators find unprecedented efficiency, and learning transcends traditional boundaries. In the convergence of these groundbreaking features, "TeachMate" stands as a beacon, illuminating a future where education is not just a process but a personalized, efficient, and insightful journey for every student and educator.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER ONE
INTRODUCTION

Embark on an educational revolution with TeachMate Agent, an innovative Intelligent Tutoring System reshaping e-learning through AI and personalized experiences.

- *Pioneering Intelligent Tutoring Systems (ITS) for E-Learning Revolution*

The TeachMate Agent stands as a revolutionary Intelligent Tutoring System (ITS), poised to redefine the landscape of e-learning and e-teaching. Fueled by the dynamic capabilities of Python, this advanced platform harnesses the potential of Agent-Based Systems to deliver tailored learning experiences for both educators and students. Positioned as a pathfinder, it leads the charge in transforming ITS technology, showcasing ingenuity through the integration of embedded information with RAG Learning.

- *AI-Infused Customization: The Heart of Educational Transformation*

At its core, TeachMate Agent is an advanced program at the forefront of educational technology. Its primary mission is to revolutionize the educational experience, especially for students navigating the complexities of abundant knowledge and time constraints.

By seamlessly integrating cutting-edge technologies such as OpenAI's GPT-3.5 Turbo, TeachMate Agent offers a user- centric platform. Students can effortlessly submit PDFs, documents, and images, pose unlimited questions, and receive real-time evaluations, thus creating a dynamic and adaptive learning environment.

- *Empowering Learners: Intelligent Feedback for Optimal Results*

TeachMate Agent operates as an informed online tutor, providing a critical interface for learners grappling with intricate subject matter. The platform's standout feature lies in its ability to offer intelligent feedback and real-time assessments. This empowerment allows students to dynamically adjust their study strategies, significantly enhancing overall learning outcomes. With its rich capabilities and user-friendly interface, TeachMate Agent emerges as an invaluable tool, aiding students in overcoming the multifaceted challenges of education and facilitating a transformative and personalized learning journey.

- *The TeachMate Agent Advantage: An Evolution in Education*

The TeachMate Agent is a catalyst for educational transformation. Its pioneering role in ITS technology, integration of AI for customization, and commitment to providing intelligent feedback underscore its influence on the direction of e-learning and e-teaching. As education continues to evolve, the TeachMate Agent stands as an exemplar of innovation, navigating the intersection of technology and learning.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER TWO
LITERATURE SURVEY

- *Subjective Answers Evaluation using Machine Learning and Natural Language Processing:*
  Muhammad Farrukh Bashir, Hamza Arshad, A. R. Javed, N. Kryvinska, S. Band (2021) –*Semantic Scholar*

- *Automatic Question Generation from Documents for E-Learning:*
  K. Sathiyamurthy, T. Geetha (2012) –*Semantic Scholar*

- *Extraction of Information from Handwriting using Optical Character Recognition and Neural Networks:*
  P. Mishra, Pratik Pai, Mihir Patel, Reena Sonkusare (2020) - *4th International Conference on ICECA*

- *Machine Learning Approach for Automatic Short Answer Grading:*
  Lucas Busatta Galhardi, Jacques Duilio Brancher (2018) – *Semantic Scholar*

- *Improving Handwriting Recognition by the use of Semantic Information:*
  M. Liwicki, Hassan Mohamed Abou Eisha, A. Dengel (2010) - *International Workshop on Document Analysis Systems*

- *Get IT Scored using Auto SAS - An Automated System for Scoring Short Answers:*
  Yaman Kumar Singla, Swati Aggarwal, Debanjan Mahata, R. Shah, P. Kumaraguru, Roger Zimmerman (2019) - *AAAI Conference on Artificial Intelligence*

- *Real-Time Automated Answer Scoring:*
  Akash Nagaraj, Mukund Sood, Gowri Srinivasa (2018) - *International Conference on Advanced Learning Technologies*

- *A Hierarchical Classification Approach to Automated Essay Scoring:*
  Danielle S. McNamara, Scott A. Crossley, Rod D. Roscoe, Laura K. Allen, Jianmin Dai (2015) – *Semantic Scholar*

- *Machine Comprehension by Text-to- Text Neural Question Generation:*
  Xingdi Yuan, Tong Wang, Çaglar Gülçehre, Alessandro Sordoni, Philip Bachman, Saizheng Zhang (2017) - *Rep4NLP@ACL*

- *AI based Dynamic Model for Question Paper Generation and Performance Monitoring:*
  Shubhra Jena, Aaryan Raina, H. Raina, Charusheela Nehete - *2022 International Conference on Applied Artificial Intelligence and Computing (ICAAIC)*

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER THREE
PROBLEM DEFINITION

- *Time-Intensive Grading Made Efficient:*
  Automating exam grading liberates educators from tedious assessments, delivers prompt feedback, and cultivates an efficient teaching environment, enhancing overall educational effectiveness.

- *Personalized Learning Resources:*
  Generates customized practice material, tailoring content to individual student needs, promoting engagement, and enhancing comprehension through personalized learning.

- *Streamlined Content Extraction:*
  Simplifies information extraction from PDFs, documents, and images, easing the submission process for students and facilitating seamless integration into the learning platform.

- *Real-Time Evaluation and Feedback:*
  Enables instant evaluation and feedback for students, enhancing their ability to adapt study strategies and significantly improving overall learning outcomes.

- *Enhanced Data-Driven Insights:*
  Provides educators with data-driven insights into student performance, facilitating targeted instructional strategies and fostering a personalized teaching approach.

- *Effortless Question Generation:*
  Facilitates dynamic question generation aligned with Bloom's Taxonomy, ensuring comprehensive assessments that cover various cognitive levels for a nuanced evaluation of students.

- *Accessible Handwriting Recognition:*
  Implements Optical Character Recognition (OCR) to accurately digitize handwritten responses, improving accessibility, and enabling efficient analysis of handwritten content.

- *Improved Learning Engagement:*
  Enhances student engagement by creating a user-centric platform, allowing students to submit diverse types of content easily, fostering an interactive and participatory learning environment.

- *Adaptive Learning Strategies:*
  Empowers learners to adjust study strategies based on intelligent feedback, promoting adaptive learning approaches tailored to individual strengths and weaknesses.

- *Holistic Integrated Learning Environment:*
  Unifies diverse capabilities into a centralized platform, creating a seamless and collaborative learning environment for both educators and students.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER FOUR
PROJECT DESCRIPTION

The TeachMate Agent revolutionizes the educational landscape, introducing an Intelligent Tutoring System (ITS) that transcends conventional boundaries. Fueled by the power of Python and leveraging Agent-Based Systems, TeachMate offers a tailored learning experience for educators and students alike. This innovative platform addresses a myriad of challenges in education, from time-consuming grading to the need for personalized learning resources.

➢ *Proposed Design*

The TeachMate Framework pioneers an innovative approach to crafting an Intelligent Tutoring System (ITS) by harnessing the synergy of Python and Agent-Based Systems. Comprising four key components, this framework orchestrates a seamless process – document processing, query processing, response generation, agent interaction.

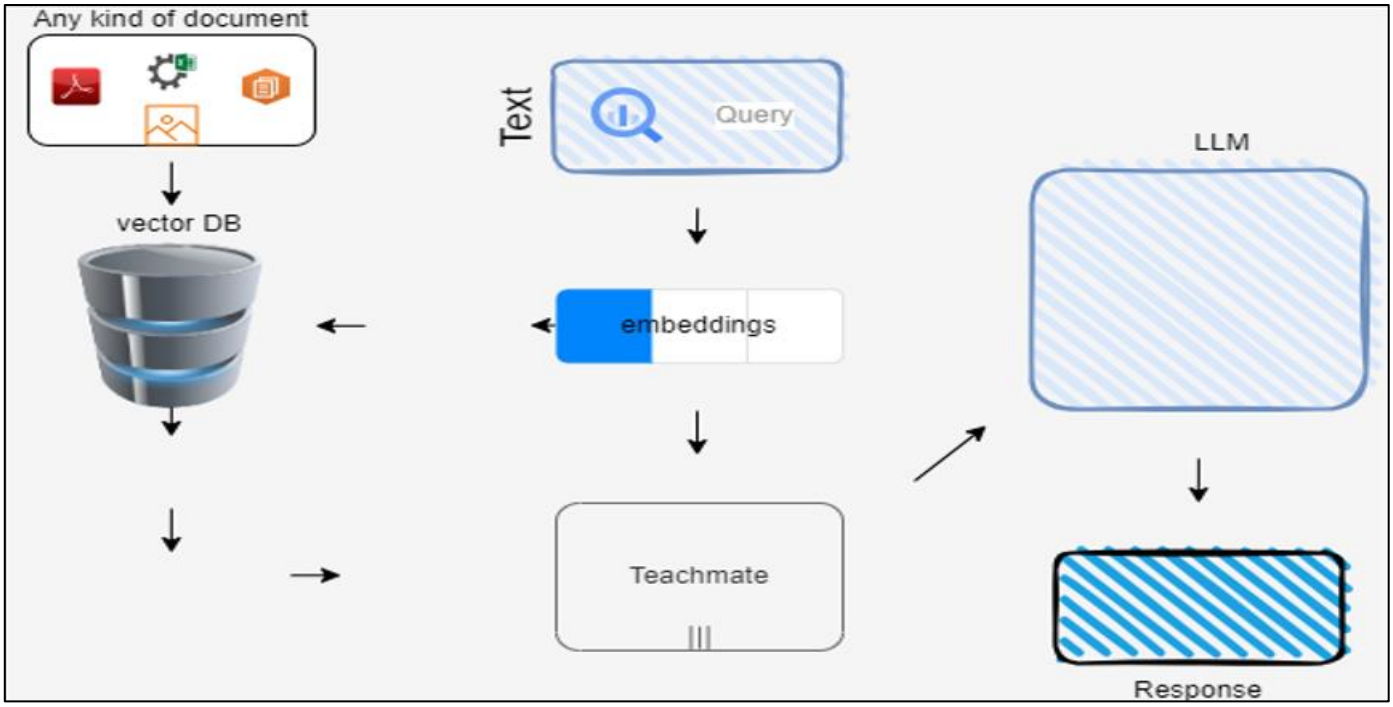

Fig 1 Proposed Design

➢ *Project Use Case*

For educators, TeachMate streamlines the grading process by automating assessments, providing quick feedback, and creating an efficient teaching environment. The system's ability to extract information from various file types, including PDFs and images, simplifies content submission for students, fostering seamless integration into the learning platform.

TeachMate excels in generating personalized learning resources, adapting content to individual student needs. Its dynamic question generation system aligns with Bloom's Taxonomy, ensuring a comprehensive assessment that caters to various cognitive levels. Additionally, the platform's integration of Optical Character Recognition (OCR) facilitates accurate digitization of handwritten responses, further enhancing accessibility and analysis.

Beyond grading, TeachMate empowers learners by offering real-time evaluations and intelligent feedback. This adaptive learning approach allows students to adjust their study strategies, leading to improved learning outcomes. The platform's rich capabilities and user-friendly interface create a holistic and collaborative learning environment, making TeachMate Agent an invaluable tool for both educators and students navigating the challenges of modern education.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER FIVE
REQUIREMENTS

➢ *Functional Requirements*

- *User Authentication:*

The TeachMate Agent ensures a secure and user-friendly authentication process. Users will access the platform through industry- standard authentication protocols, guaranteeing the safety of their accounts and personal information. Leveraging Google Vision, the platform enhances security measures by incorporating biometric authentication, adding an extra layer of protection to user accounts.

- *Handwriting Input:*

TeachMate Agent employs Google Vision OCR technology to accurately digitize and convert handwritten responses into digital text. This feature facilitates seamless content submission, allowing users to submit a variety of file formats, including PDFs, documents, and images. The platform prioritizes user convenience by ensuring a smooth and efficient integration process for handwritten input, creating a hassle-free experience for both educators and students.

- *Question Generation:*

The platform features an intelligent question generation system aligned with Bloom's Taxonomy, offering educators a comprehensive tool for creating diverse assessments. The dynamic question generation capabilities ensure that assessments cover various cognitive levels, providing a nuanced evaluation of students' understanding. This functionality promotes a holistic approach to evaluating student knowledge and comprehension.

- *Scoring Answers:*

TeachMate Agent incorporates Google Vision for accurate assessment of handwritten answers, ensuring precise and reliable scoring. Machine learning algorithms are employed to assess subjective responses, promoting objectivity and consistency in the evaluation process. This feature significantly reduces the burden on educators while providing students with fair and prompt feedback on their assessments.

- *Assigning Marks:*

The platform offers a flexible marking system, allowing educators to assign marks based on predefined criteria tailored to the specific requirements of each assessment. The system ensures real-time marking capabilities, streamlining the evaluation process and providing educators with the tools needed to assess student performance efficiently.

- *Summarizing Notes:*

TeachMate Agent integrates natural language processing techniques for a robust summarization module. This functionality enables the platform to generate concise summaries by extracting key information from textual content. Leveraging Google Vision, the platform ensures efficient extraction of information, providing educators and students with clear and digestible summaries of complex material.

➢ *Non-Functional Requirements*

- *Performance:*

The TeachMate Agent is designed to exhibit high-performance standards, ensuring swift and responsive interactions for users. The platform aims for rapid data processing, minimizing loading times, and providing a seamless user experience. Performance benchmarks will be established to measure and maintain the efficiency of critical functions, such as real-time feedback and content submission, even during periods of high user activity.

- *Security:*

Ensuring the utmost security of user data is a top priority for TeachMate Agent. The platform employs robust encryption protocols to safeguard sensitive information, including authentication credentials and assessment data. Ethical hacking practices and regular security audits will be conducted to identify and rectify potential vulnerabilities, ensuring a secure environment for both educators and students.

- *Scalability:*

TeachMate Agent is designed with scalability in mind, anticipating potential growth in user numbers and data volume. The architecture is built to seamlessly accommodate an increasing user base without compromising system performance. Scalability considerations extend to features such as question generation and real-time feedback, allowing the platform to scale up effectively with the evolving demands of educational institutions.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

- *Usability:*

Usability is a core focus for TeachMate Agent, aiming to provide an intuitive and user-friendly experience for educators and students alike. The platform prioritizes clear navigation, concise interfaces, and user- centric design principles. Extensive user testing will be conducted to gather feedback and iteratively enhance the platform's usability, ensuring a positive and efficient experience for all users.

- *Compatibility:*

TeachMate Agent is designed to be compatible with a diverse range of devices and operating systems. The platform will be optimized for various browsers and devices, including desktops, laptops, tablets, and mobile phones.

Compatibility considerations extend to integration with popular Learning Management Systems (LMS), ensuring seamless interoperability with existing educational technologies.

- *Ethical Considerations:*

Ethical considerations are integral to the design and implementation of TeachMate Agent. The platform prioritizes user privacy, transparency, and fairness in assessments.

Ethical guidelines will be established to govern the use of AI algorithms in question generation and assessment scoring, ensuring unbiased and equitable evaluations. The platform is committed to fostering an ethical learning environment, promoting integrity and inclusivity in educational practices.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER SIX
METHODOLOGY

This chapter delineates the intricate methodology employed in the proposed TeachMate Agent. The methodology is structured across 3 modules, each contributing to the comprehensive nature of the Agent.

➢ *Handwritten Notes Teacher – Enhancing Handwritten Assignments & Notes*

A key component of the TeachMate system, the HANDWRITTEN NOTES TEACHER simplifies the note-taking process for students by including sophisticated features with ease. Started by picture files of handwritten notes supplied by users, this feature uses a methodical procedure to derive significant insights.

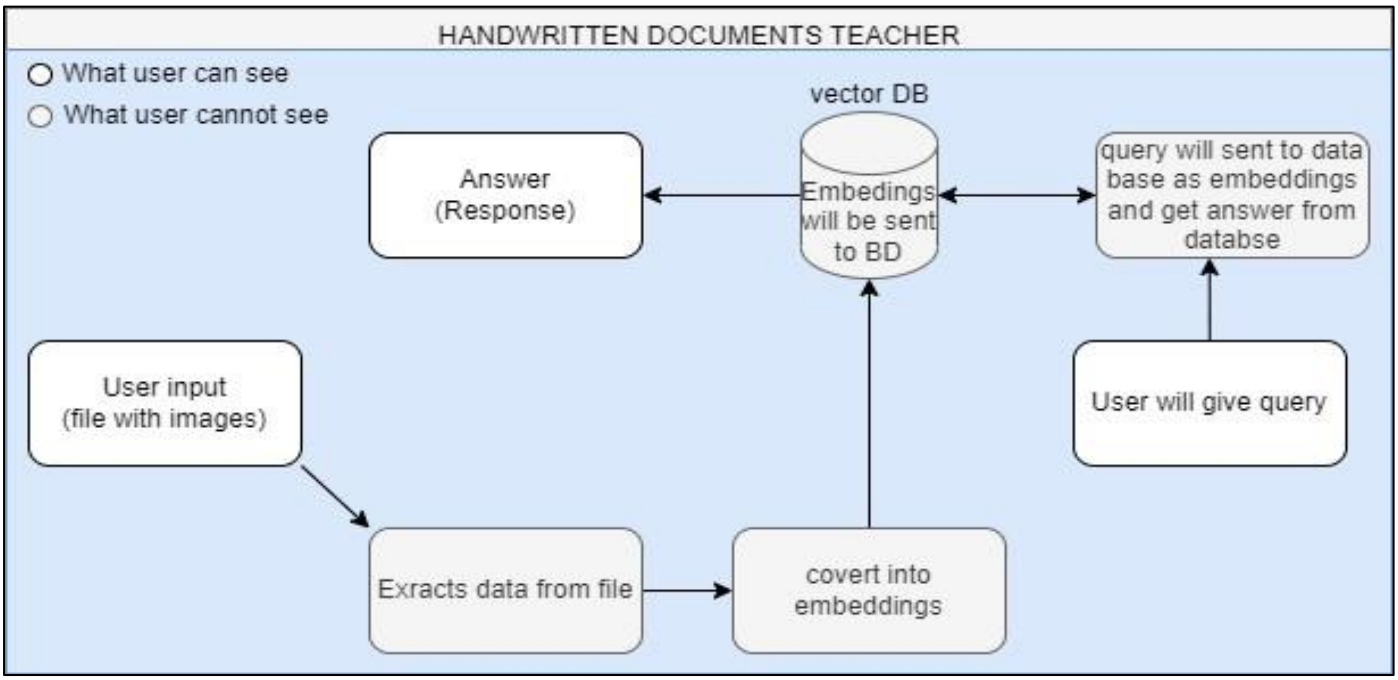

Fig 2 Handwritten Notes Teacher

➢ *Data Extraction Through Image Analysis:*

User-submitted image files containing handwritten notes undergo meticulous processing by the TeachMate Agent. Google Vision techniques meticulously extract textual content from these images, enabling their transformation into digital format.

➢ *Pre-Processing and Embedding:*

The extracted text undergoes a series of natural language processing (NLP) steps, including tokenization, lemmatization, and stopword removal, to refine its interpretability. Conversion into vector representations via embeddings ensues, where these numerical representations encapsulate both semantic and syntactic information.

➢ *Utilization of Vector Database:*

The resultant vector representations find their place within a dedicated vector database, leveraging its dense index of Wikipedia articles as a non-parametric memory reservoir within the framework.

➢ *Interactive Query and Response Generation:*

Empowering user engagement, the TeachMate Agent accommodates queries related to the uploaded notes, ranging from questions to feedback or specific requests. Leveraging a neural retriever, relevant documents within the vector database are retrieved based on the query vector. A retrieval-augmented generation (RAG) model—an amalgamation of pre-trained parametric and non-parametric memory—takes center stage, crafting responses based on the query vector and retrieved documents.

➢ *Refined Presentation of Responses:*

Post- generation, responses undergo meticulous post-processing, including spelling and grammar corrections through NLP methodologies, ensuring accuracy and readability.

The Handwritten Notes Teacher feature offers a multitude of advantages to students. Beyond mere transcription, it facilitates note enhancement, concept acquisition, feedback reception, and doubt resolution. Its instantaneous and precise responses not only save time but also alleviate effort.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

➢ *Personal Teacher – Tailored Tutoring*

The dynamic aspect of the TeachMate system is the PERSONAL TEACHER, which provides students with individualised tutoring experiences in a variety of topics. This capability aims to fulfil each user's unique learning requirements through an easy-to-use method.

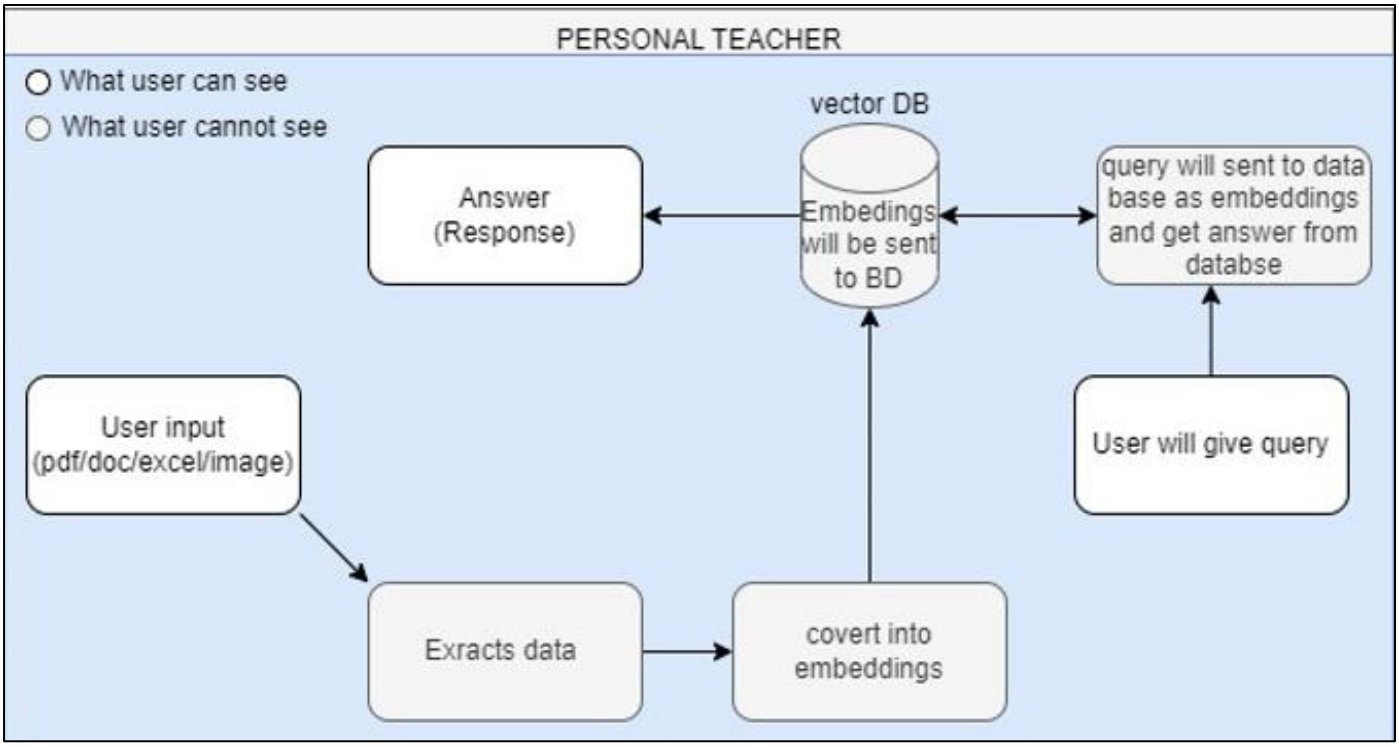

Fig 3 Personal Teacher

➢ *Comprehensive Study Material Interpretation:*

User-submitted files in various formats—PDFs, DOC, Excel, or images—serve as the foundation for personalized tutoring within the TeachMate Agent. Employing Google Vision techniques, the platform adeptly extracts textual content from the uploaded files.

➢ *Pre-Processing and Embedding Transformation:*

Extracted text undergoes an array of natural language processing (NLP) techniques, including tokenization, lemmatization, and stopword removal, fostering enhanced interpretability. Transformation into vector representations via embeddings unfolds, encapsulating the semantic and syntactic essence of the study materials.

➢ *Leveraging Vector Database Capabilities:*

These resultant vector representations find their place within the vector database, drawing from its dense index of Wikipedia articles, constituting a vital non-parametric memory reservoir.

➢ *Interactive Querying and Response Generation:*

Enabling user engagement, the TeachMate Agent accommodates diverse queries pertinent to the submitted study material, ranging from questions to feedback or specific requests. Employing a neural retriever, relevant documents within the vector database are accessed based on the query vector. A retrieval-augmented generation (RAG) model, a fusion of pre- trained parametric and non-parametric memory, drives the generation of responses rooted in the query vector and retrieved documents.

➢ *Refined Presentation of Personalized Responses:*

Post-generation, responses undergo meticulous post-processing, encompassing NLP-based spell-check and grammar correction, ensuring accuracy and coherence.

The personal teacher feature emerges as a potent tool, offering students the flexibility to learn at their own pace and depth across various subjects. Beyond fostering learning, it facilitates feedback reception, doubt resolution, and expedites access to instant and precise answers, optimizing time and effort invested in academic pursuits.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

➢ *Scorecard Provider*

An innovative component of the TeachMate system, completely reimagines the assessment environment by giving students thorough feedback on the papers they upload. Students can receive a comprehensive assessment that includes a thorough grade breakdown in addition to a pass/fail status by just uploading a picture of their project. By providing unbiased evaluation, this feature transforms the educational process and enhances students' comprehension of their performance.

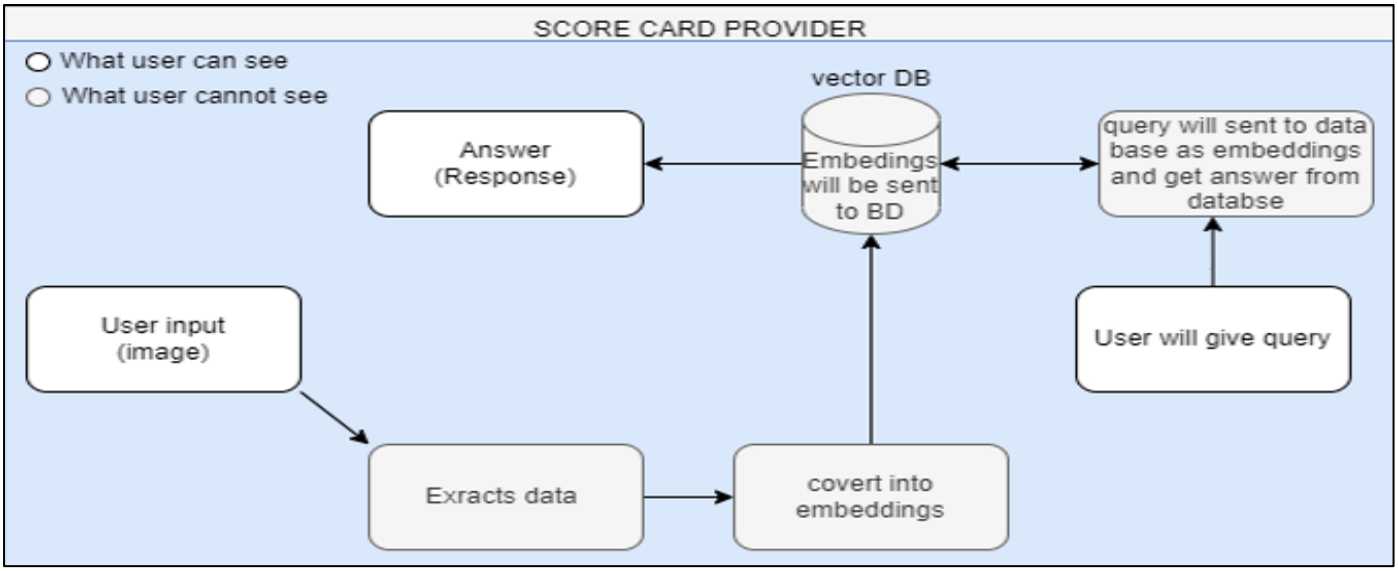

Fig 4 Scorecard Provider

➢ *User-Generated Image Input:*

Students or Teachers initiate the evaluation process by submitting an image file containing their handwritten or typed assignments, spanning essays, reports, projects, or tests.

➢ *Google Vision Data Extraction:*

Employing Google Vision technology, the system extracts textual content from the image, meticulously converting it into a digital format.

➢ *Conversion into Embeddings:*

Extracted text undergoes transformation into vector representations or embeddings, adeptly capturing semantic and syntactic intricacies within the text.

➢ *Transmission to Dedicated Database (DB):*

These embeddings are transmitted to a specialized database (DB) housing a repository of grading criteria and rubrics tailored for various assignment types.

➢ *Dynamic Answer Generation:*

Drawing from the DB's wealth of grading criteria and rubrics, the system generates a detailed response based on the embeddings, offering insights into pass/fail status, grades, score breakdowns, and concise feedback summaries.

➢ *User-Friendly Answer Presentation:*

The system presents this response to the user in a readable and informative format, employing markdown elements and code blocks for enhanced clarity.

Students can avoid the usual wait for teacher comments by using the SCORE CARD PROVIDER function, which offers instantaneous and trustworthy evaluations. It promotes skill development and knowledge refinement while assisting in the development of self-awareness by identifying personal strengths and areas for development. This function is a vital element in the educational process since it provides an easy and efficient way to assess learning results.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER SEVEN
DELIVERABLES

In the field of e-learning and e-teaching, TeachMate Agent is a cornerstone that is about to usher in a new era of individualised and effective learning opportunities for teachers and students. TeachMate Agent, billed as an Intelligent Tutoring System (ITS), blends leading-edge technologies— Python and Agent-Based Systems—to create a platform that deftly meets the various demands of students. Using OpenAI's GPT-3.5 Turbo and the power of artificial intelligence (AI), TeachMate Agent serves as a virtual tutor, providing students with critical help when they struggle with challenging material. This individualised method greatly increases learning efficiency while also assisting in the comprehension of difficult subjects Beyond its effects on students, TeachMate Agent shows itself to be a useful tool for teachers.

Due to its many features, which include the ability to upload PDF files, allow an infinite number of student inquiries, and provide scores in real time, teachers are able to customise their teaching strategies to each student's specific requirements. TeachMate Agent has the potential to completely transform conventional learning paradigms; it's not simply another tool in the educational toolbox. With its combination of AI and personalised coaching, it promises real-time feedback and evaluations that improve learning and increase student engagement. This represents a revolutionary change in learning approaches. Additionally, the emphasis on individualised education gives teachers more control by allowing them to plan sessions that specifically cater to the requirements of each student. This customised strategy promotes interactive and collaborative learning environments in addition to improving learning results. It redefines the future of education and e- learning by shining a light on innovation and bringing in an era where personalised, and effective experiences are the standard.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/24may601

CHAPTER EIGHT
CONCLUSION

The TeachMate agent is a single touchpoint solution that has been designed to uplift educational experiences for both students and educators alike. With a never before seen – paper correction engine – teachers can evaluate student test results and provide them with feedback question wise – as to why they either scored high or low. Students can gamify exam preparation by asking our agent to generate study questions or by asking questions related to their specific notes, or study guides provided by their universities.

In the TeachMate agent has the potential to change learning as we know it – and save countless hours for students and educators alike in the process.

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REFERENCES

[1]. J. Wang and Y. Dong, "Measurement of text similarity: A survey", Information, vol. 11, no. 9, pp. 421, Aug. 2020.
[2]. M. Han, X. Zhang, X. Yuan, J. Jiang, W. Yun and C. Gao, "A survey on the techniques applications and performance of short text semantic similarity", Concurrency Comput. Pract. Exper., vol. 33, no. 5, Mar. 2021.
[3]. M. S. M. Patil and M. S. Patil, "Evaluating Student descriptive answers using natural language processing", Int. J. Eng. Res. Technol., vol. 3, no. 3, pp. 1716-1718, 2014.
[4]. Niu n Xiao-Xiao and Y. Suen Ching, "A novel hybrid CNN-SVM classifier for recognizing handwritten digits", Elsevier, vol. 45, no. 4, pp. 1318-1325, April 2012.
[5]. Ma Caiyun and Zhang Hong, "Effective Handwritten Digit Recognition Based on Multi-feature Extraction and Deep Analysis", 12th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD), pp. 297-301, 2015.
[6]. Ma Caiyun and Zhang Hong, "Effective Handwritten Digit Recognition Based on Multi-feature Extraction and Deep Analysis", 12th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD), pp. 297-301, 2015.