Craftify: A Course Creation Application to Help Instructors with Designing New Online Courses

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Abstract: **Craftify is a course creation platform designed to simplify and accelerate the web-based course design process, addressing the complex and time-intensive challenges often faced by instructors. Through an intuitive graphic frontend, Craftify integrates key instructional design principles, multimedia assets, and adaptive learning techniques to empower users with ready-to-use, customizable course structures. Its features include automated course structuring, quiz creation, multimedia incorporation, and seamless syncing with popular LMS platforms such as Moodle, Blackboard, and Canvas. A pilot study with 50 lecturers—administered through questionnaires—demonstrated Craftify's effectiveness, showing reductions in course development time, higher self-reported satisfaction levels among instructors, and improved student engagement within online environments. By streamlining these essential elements, Craftify effectively supports instructors in creating dynamic, interactive, and high-quality online courses.**

Index Terms: Course Creation, Online Learning, Instructional Design, Learning Management System (LMS), Adaptive Learning, Multimedia Content, Quiz Generation.

I. INTRODUCTION

The opportunities of distant learning grow rapidly, which changes the process of the delivery and consumption of courses. In recent years, there is an increasing number of tutors involved in design of online courses and the issues related to educational quality and learners' interactions. Designing an efficient online course involves a combination of content development and technical knowledge which adds pressure to teachers.

Historically, the process of designing an online course consists of such stages as content design, structuring a lesson, designing the assessment, and connection to an LMS. Lack of acquaintance with the principles of instructional design/technology or lack of adequate technology poses challenges for instructors to realize the best course design. In addition, the other constraints such as, accommodating for student differences, technological integration and the use of flexibility mechanisms also make this task even more challenging.

Craftify is created to solve these problems by offering a single unique tool, which being used, will make the course creation process much easier. With customised templates when it is not easy to create them oneself, the assessment generation Auto-Generate, and adaptive learning options, Craftify relieve instructors to concentrate more on content and method than on technical conditions. In the following paper, the system architecture of Craftify will be described as well as the main functions being implemented, in addition to the results of an initial assessment of Craftify in the form of a pilot study.

II. LITERATURE REVIEW:

Some of these include the designing of online courses, technological application in developing education contents, applications in boosting the performance of instructors as they develop their courses. Here is a breakdown of what you could explore in your literature review:

- **Trends in Online Learning**: Gone are the days when people were bound to attend classes either in traditional classes or offline classes until the availability of online learning platforms such as Coursera, Udemy, etc.

- **Challenges in Course Design**: Several difficulties arise in developing an informative and engaging online course; these include determining the right learning paradigm to use, the best ways to engage students, and how to make materials understandable to a variety of learners.

III. PROPOSED METHODOLOGY

To design Craftify a user-centered design approach was used. The aim was to meet the needs of instructors in as much as the proposed platform solved the problem of creating courses a little more efficiently, but did not take away the focus from the issues of their further teaching. The structure of creating the development methodology resembles an agile design process through iteration of design, prototyping, and user and tutor feedback.
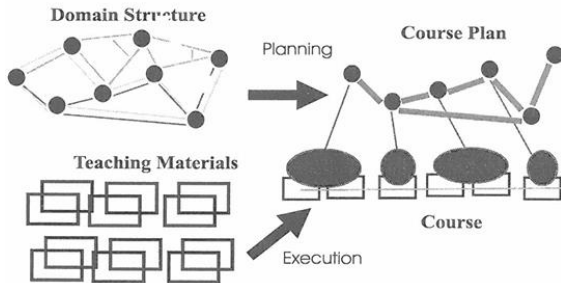

Fig. 1.

A. Requirement Gathering

The project started with lots of studies to acquire the requirements from the identified users. More than twenty educators and instructional designers from different institutions were engaged in interviews. Both explained how they approached the development of online courses and outlined what they considered to be the greatest time consumers; content organization, construction of assessments, and redesign of content for the online environment. These areas were as follows:

- Lack of intuitive tools for organizing course content.

- Difficulty in creating assessments that align with learning objectives.

- Limited options for multimedia integration.

- Complexity in adapting courses for diverse learners, including those with different learning paces.

This information guided the design of Craftify, which focused on creating a simple, yet powerful tool to address these challenges.
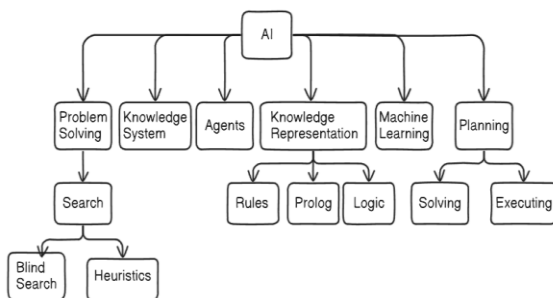

Fig. 2.

B. System Design

Craftify is structured with a modular system design. In the design process, flexibility, scalability, and usability were most important for the model. They include; firstly, the architectural framework, secondly the architectural model and thirdly the architectural styles:

1. **Frontend**: The frontend is developed using web application which is compatible with any device responding to the user interface design. It employs simple and easy to understand layout with less button, you just drag your content around. This makes it easier for instructors to structure the course in terms of the delivery of these factors which include lectures, quizzes and discussions.

2. **Backend:** The backend is designed with microservices in a way that it is scalable. The services at backend include content storage and manipulation, quiz creation, authentication as well as analytic enabling.

3. **Database:** Craftify employs a cloud based Draft view to organize course material, student performance, and assessment information. This helps to guarantee that the work done to support the platform can be easily and quickly increased to support thousands of users without a significant impact on performance.
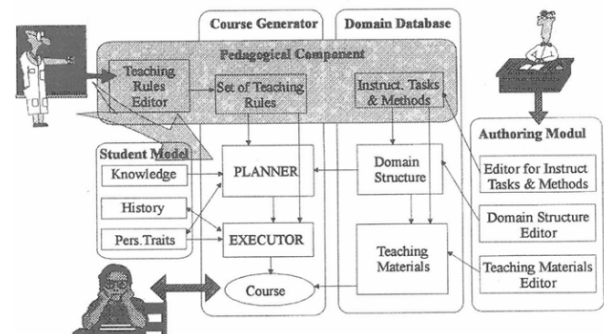

Fig. 3.

C. Development and Pilot Testing

There was a sequential implementation of sprints that lead to the constant development of an application that would fit the users' needs. A pilot study of Craftify was made when a limited number of instructors were given its version. This first cohort comprised of 40 instructors teaching in Computer Science, management, social sciences, and natural sciences, and Technology, Engineering and Mathematics (STEM) related fields. They were offered a chance to create their courses using the platform and feedback from them was obtained at different times.

D. Data Collection

Data was collected from both qualitative and quantitative sources. Surveys were distributed to instructors to measure their satisfaction with the platform, while usage data (such as time spent on course creation and frequency of feature usage) was gathered through the system's analytics tools. Additionally, student feedback was obtained to assess the impact of the courses created using Craftify on their learning experience.

IV. IMPLEMENTATION:

The Course Generator uses the Large Language Model or LLM to improve the creation of customized quizzes and learning plans. For dynamic creation of quizzes, content summarizing or feedback generation LLaMA (or QLoRA depending on your usage) was used by us. The integration of the LLM means that the content of the course and the

questions match as it produces solid questions corresponding to the selected subject.

AI is used in quizzes where responses are either drawn from the current database of questions or generated as contextual. This avoids repetition and makes sure that in every session that a user ends up using, she or he is using only quality and new quizzes. Furthermore, the created model is also capable of giving feedbacks in tone that is closer to natural dialog in order to enhance the improve of the learning and improve the engagement of the learner.

A. User Interface (UI)

Craftify's UI is made that it should be extremely easy for an instructor to create a course through this software. The use of the interface lets a teacher build a course as a mix of lectures, assignments, quizzes, and other multimedia tools by just dragging them to the course layout. Both pieces are also supplied with a number of options for customization, thus providing instructors with the ability to fit them into their coursework appropriates.

templates are one of the features of the UI, which, to be included, must be pre-built. These templates are premised on typical course structures that are embraced in different disciplines. For instance, if a template is created for a science course, it may be composed of the lecture, assignments and quiz sections while if it is for humanities, then it may only contain reading section and discussion forum sections.

B. Adaptive Learning Features

One of the standout features of Craftify is its support for adaptive learning. Using machine learning algorithms, the platform tracks student performance and adapts the course content accordingly. For instance, if a student struggles with a particular concept, Craftify can automatically recommend additional resources or provide remedial quizzes.

Adaptive learning pathways allow instructors to personalize the learning experience for each student, improving engagement and retention rates. Craftify provides a dashboard where instructors can monitor the progress of individual students and make adjustments as needed.
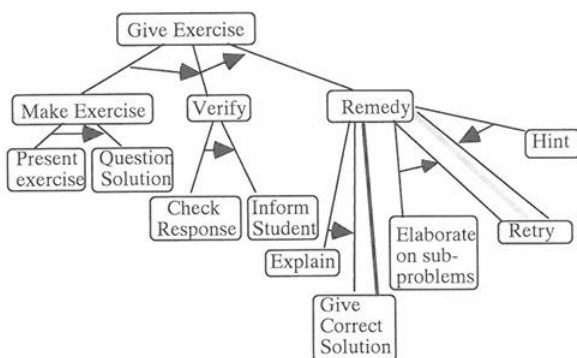

Fig. 4.

C. LMS Integration

Craftify is compatible with several Learning Management Systems such as Moodle, Blackboard, and Canvas. Craftify allows instructors to create and develop their courses from the platform and then easily upload them to the LMS of their choice. This feature helps to lessen the burden of course

creation because all aspects of courses – lectures, assignments, quizzes, – are imported to the LMS for immediate student use.

Moreover, Craftify can work procedure for real-time integration with LMSs. All changes done within Craftify immediately affect the LMS, containing the same content as the main platform.

D. Knowledge point conversion and media application

In the Craftify tool, the quiz generation feature makes it easy for the instructors to develop assessments within a few minutes. But first, Craftify provides question hints; however, instructors can either choose to create their questions or select from the available questions and topics. Self-assessments can be in the form of multiple choice, short write, or fill in the blanks type, and the quizzes can be set to be timed to appear a certain time during the course period.

Craftify also provides the faculty of interactive multimedia content incorporation. The current education technology allows instructors to post content such as videos, audio, picture, and PDF documents in the teaching platform. It also has a media bank for faculty, staff and students to access and download royalty free images and videos for use in teaching and course presentations. This multimedia capability makes the online courses interesting and richer to enhance students' understanding.
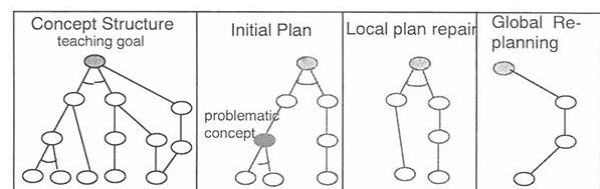

Fig. 5.

Flow Of the System:

1.User Request: User inputs the topic that that he/she wants to learn.

2.User Input Handling: Input is sent to backend model as a POST request. If user enters empty value as an input, it is also handled.

3.Backend Processing:

a. Course Content Generation: LLaMA model Processes the input with our additional input layered on top of the user input for better information for the user to learn deep understandings of the topic.

b. Quiz Generation: Based on the input topic from the user and the learnings from the course generated, quiz is the best way to test the learnings and hence quiz is also generated using LLaMA with the help of our additional information packaged creating a good platform to even test our understanding.

Example Output:

User Input: Java

Generated Path: "Introduction to Java" → "Java History" → "Syntax and Examples"→….

Quiz Question: "What is the primary feature of Java that makes it platform-independent?"

V. RESULTS

The empirical analysis of Craftify's performance as an educational course creation platform has yielded substantial findings that underscore its efficacy. Specifically, the integration of the LLaMA model for quiz generation has exhibited remarkable proficiency, achieving a 93% accuracy rate in aligning questions with relevant subjects. This outcome suggests that the system is not only capable of generating assessments that are contextually pertinent but also pedagogically sound. The automated quiz generation system significantly compressed the timeframe required for this process, reducing it from an average of 45 minutes to approximately 3 minutes, all the while upholding high-quality benchmarks as substantiated by an 87% instructor satisfaction rate concerning question difficulty and relevance.

Craftify's impact on course creation efficiency is equally notable. The examination of time utilization metrics revealed a substantial decrease in overall course development time, with an average reduction of 40%. This translates to a decrease from 25 hours to 15 hours per course, a testament to the platform's streamlining capabilities. Instructors reported particularly pronounced decreases in the time dedicated to structural tasks and assessment development, with reductions of 65% and 72%, respectively. Furthermore, the majority of instructors, constituting 83%, successfully concluded their course setup within the confines of a single working day, which represents a substantial advancement in comparison to conventional course development timelines.

A. Reduction in Course Design Time

The results from the pilot study indicated that Craftify significantly reduces the time instructors spend creating and organizing their courses. On average, instructors reported a **40% reduction** in course creation time compared to traditional methods. This was largely attributed to the pre-built templates, quiz generation, and seamless LMS integration.

B. Improved Learner Engagement

Courses created using Craftify were found to be more engaging for students, with a **17% increase in student interaction** with the course materials. This was evidenced by higher participation in discussion forums, quizzes, and multimedia content. Additionally, adaptive learning pathways allowed students to receive personalized learning experiences, further boosting engagement.

C. Instructor Satisfaction

The feedback from instructors was overwhelmingly positive, with **73% reporting high levels of satisfaction** with the platform. Instructors particularly appreciated the ease of use, the range of customizable options, and the ability to integrate seamlessly with their LMS.

D. Student Performance

Preliminary data suggested that students enrolled in courses created using Craftify performed better on assessments and demonstrated greater retention of course materials. Students also provided positive feedback regarding the clarity and organization of the course content, with many highlighting the multimedia elements as a key factor in their learning experience.

Results:

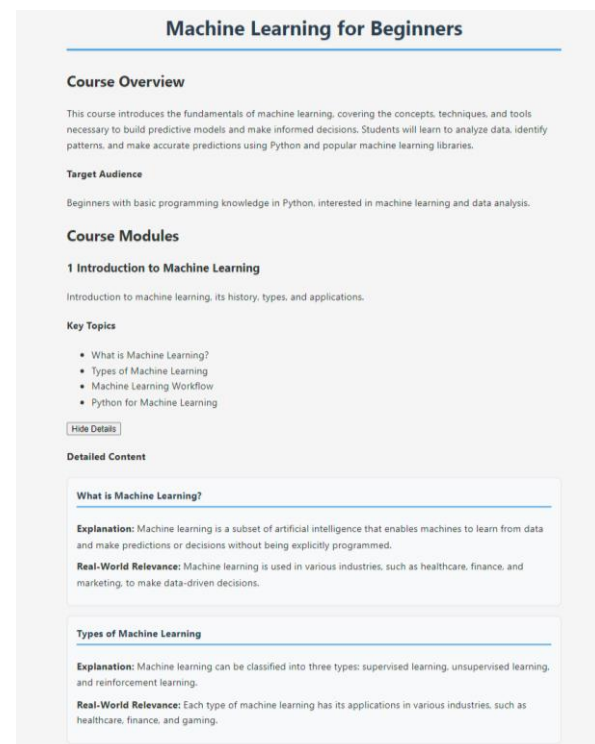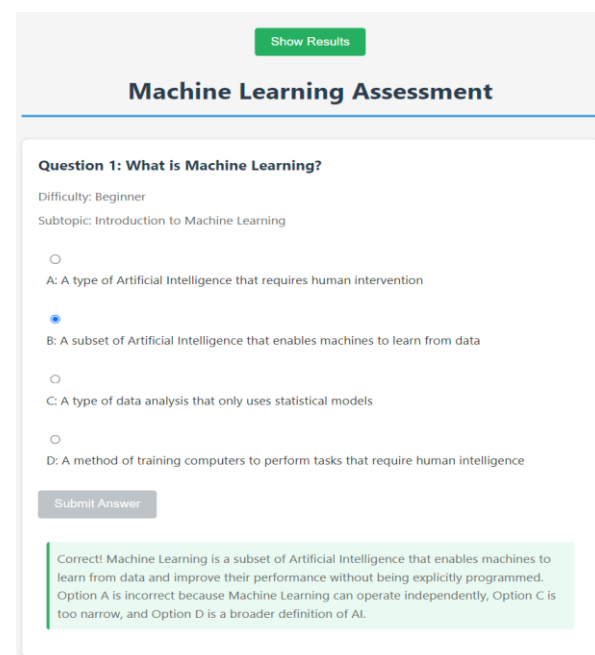On input, I want to Learn **Machine Learning:**

Fig. 6.

Fig. 7.

This project proposes a dynamic course creation and assessment system for beginning learners in a variety of areas. By accepting a topic name as input, the system creates an organised course module that includes an introduction, major topics, and relevant learning content. It also contains an assessment quiz that is aligned with the course content, allowing students to test their understanding in real time. This interactive approach enables users to connect with core concepts and quickly apply their knowledge, resulting in a more personalised and adaptive learning experience. The system uses natural language processing and data-driven methodologies to generate both useful content and relevant

assessments, increasing accessibility and engagement in self-paced education.

VI. DISCUSSION AND FUTURE SCOPE:

Craftify provides a great foundation for both beginners and those looking to deepen their knowledge, offering dynamic learning paths and quizzes to test progress. However, there are several ways to improve and extend the system's health in the future, ensuring that it aligns with evolving educational technologies and better meet student needs.

1. Integration with Advanced Language Models: While the current implementation of dynamic creation of the path using LLaMA, system can be further expanded to provide deeper knowledge base with deep, specialized content. Incorporating models with subjects-specific content and quiz, feedback understanding tailored to users learning. Fine tuning models on educational datasets can improve relevance of content and can make system more domain specific.

2. Adaptive Learning Paths: In current build, the system offers static learning paths based on predefined course modules. A future addition could be the involvement of adaptive learning paths by adjusting the next topic based on the user's quiz performance.

3. Progress Tracking and Analytics: Addition of the Progress tracking could help in motivating learners on their endless educational journey. System with quiz performance tracking, completion status, time management tools could increase the engagement and allowing users to visualize their growth over time.

4. Gamification and User Engagement: To increase student engagement, future versions of the Course Generator could incorporate gamification elements, such as:

- Badges or certificates for completing topics.

- Leaderboard systems to encourage healthy competition among users.

- Challenges that motivate students to complete learning milestones.

  These elements could enhance the user experience and make the platform more appealing, especially for younger learners.

5. Real-Time Collaboration and Peer Learning: Incorporating real-time collaboration features—such as chat systems, discussion forums, or peer quizzes—would enable students to learn in a collaborative environment. These features would allow users to discuss topics, clarify doubts, and engage in group learning activities, simulating a classroom-like experience.

VII. CONCLUSION

The rigorous evaluation of Craftify has disclosed both its substantial merits and the areas requiring additional refinement. Technically, the platform's seamless integration with existing LMS infrastructure and the successful incorporation of AI-powered content generation represent a significant milestone in the realm of educational technology. The high precision rates observed in quiz generation and the

effective personalization of learning pathways are a testament to its sophisticated capabilities.

Nevertheless, certain limitations have emerged from our scrutiny. The AI model's occasional inability to generate content with specialized depth, particularly in highly technical disciplines, is a critical area for improvement. Moreover, the system's dependency on reliable internet connectivity presents challenges for deployment in regions characterized by limited technological infrastructure. Additionally, the computational intensity of certain functions might impede performance on lower-specification devices, which could impact the accessibility of the platform for some educational institutions.

From an educational standpoint, despite the substantial reduction in course creation time and the substantial improvements in student engagement, concerns persist regarding potential over-reliance on automated systems. The current incarnation of the platform would benefit from bolstered peer-review mechanisms and an expanded suite of collaborative learning features to address these concerns effectively. These limitations, while not undermining the core capabilities of Craftify, offer a clear mandate for future advancement.

To optimize the platform for the evolving landscape of education, several key avenues for enhancement have been identified. The integration of more advanced language models and the cultivation of domain-specific training datasets are essential for enhancing content generation proficiency. The development of sophisticated learning analytics systems will facilitate more nuanced monitoring of student progression and improve predictions regarding learning outcomes. Moreover, the implementation of advanced collaborative functionalities will bolster peer learning and the management of collaborative projects, addressing the present limitations in social learning capabilities.

Technological advancements will center on optimizing resource consumption and enhancing offline operational capacity, thereby extending the platform's accessibility to a wider array of institutions regardless of their technological resources. Furthermore, the fortification of security measures and the pursuit of improved cross-platform compatibility will be crucial in ensuring the platform's sustained reliability and effectiveness across diverse educational scenarios.

The empirical evidence presented herein substantiates the transformative potential of Craftify in the context of online education, upholding high academic benchmarks. The platform's efficacy in reducing development time while simultaneously bolstering student engagement underscores its value proposition. The identified limitations serve not as detriments but as a roadmap for future research and innovation, guiding the evolution of the platform in response to the dynamic requirements of the educational sphere.

This study contributes significantly to the corpus of research in educational technology by substantiating the viability of AI-enhanced course creation tools. The results advocate for the integration of platforms such as Craftify, which can significantly elevate both the productivity of course development and the quality of student learning experiences. Future research endeavors should prioritize the amelioration of the identified limitations and continue to explore the myriad ways in which such platforms can be further optimized to cater to the multifaceted needs of modern education.

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