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SPACED REPETITION BASED ADAPTIVE e-LEARNING FRAMEWORK

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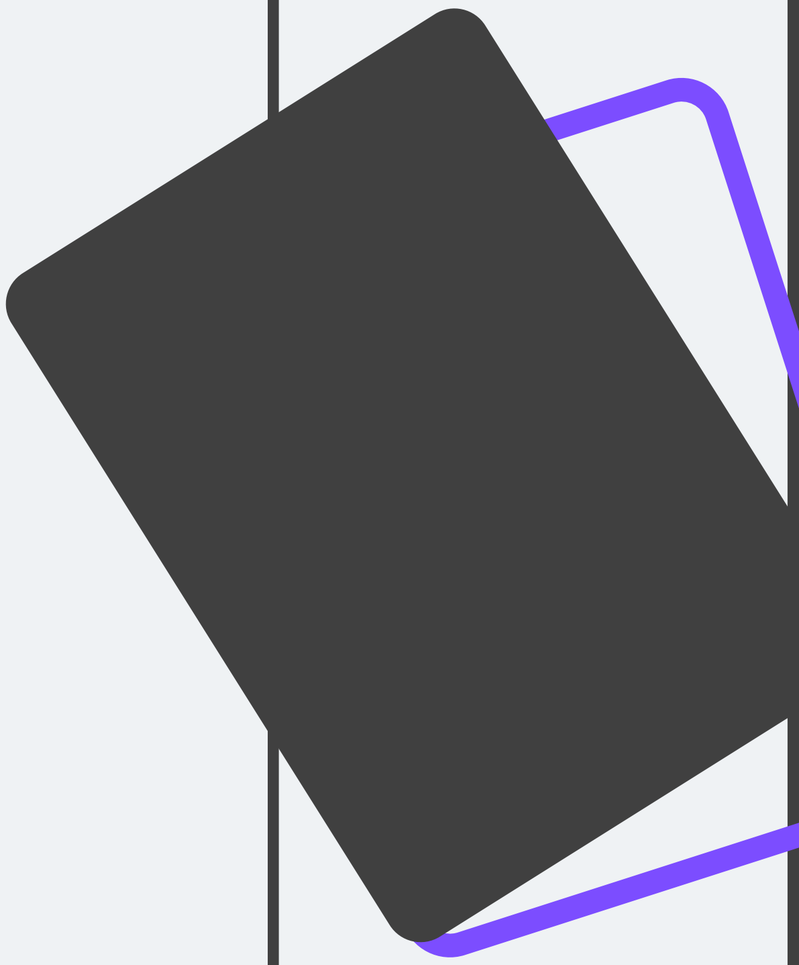
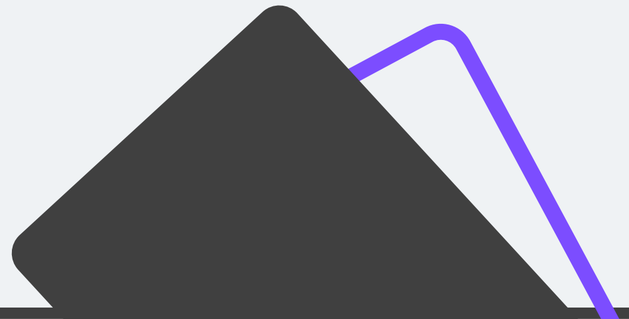


Introduction

- Necessity of memorization.
- The current methods of memorization.
- Ideal method and expected results.



LITERATURE REVIEW

What we referred to and our takeaways

#1

Asking students questions from a certain topic based on their mastery of said topic

#2

Segregation of quiz questions into levels ranging from very easy to extremely difficult to challenge students of all levels and at the same time cater to their mastery levels.

ADAPTIVE LEARNING AND ANALYTICS IN ENGINEERING EDUCATION

by Rajesh Panicker, Akash Kumar, Dipti Srinivasan, Deepu John.

#1

Game like elements result in more students actively learning

#2

Spaced repetition keeps them engaged with the help of “acquisition cards” and “Maintenance Cards.”

USING SPACED REPETITION AND GAMIFICATION TO ENHANCE K-12 STUDENT SCIENCE LITERACY WITH ON-DEMAND MOBILE SHORT READS

Martin K.-C.Yeh Abtin Toshtzar Laura Guertin Yu Yan

#1

Different values to be assigned to a quiz question like “Difficulty level set from which the question is asked,” “The difficulty of the question itself,” etc

#2

In language learning, a complex graph can be created showing the learners ability in various aspects of learning, for example, Listening, reading etc

RECOGNITION AND APPLICATION OF LEARNER’S COGNITIVE ABILITY FOR ADAPTIVE E-LEARNING.

Bingxue Zhang Yuxiang Li Yang Shi Longfeng Hou

#1

Design of the app is key

#2

Flashcards are a solid medium for quizzing

#3

SP Algorithms are extremely effective at tasks involving memorization.

EXISTING ARCHITECTURE: ANKI APP

Boris Sofman, Mark Palatucci, and Hanns Tappeiner

#1

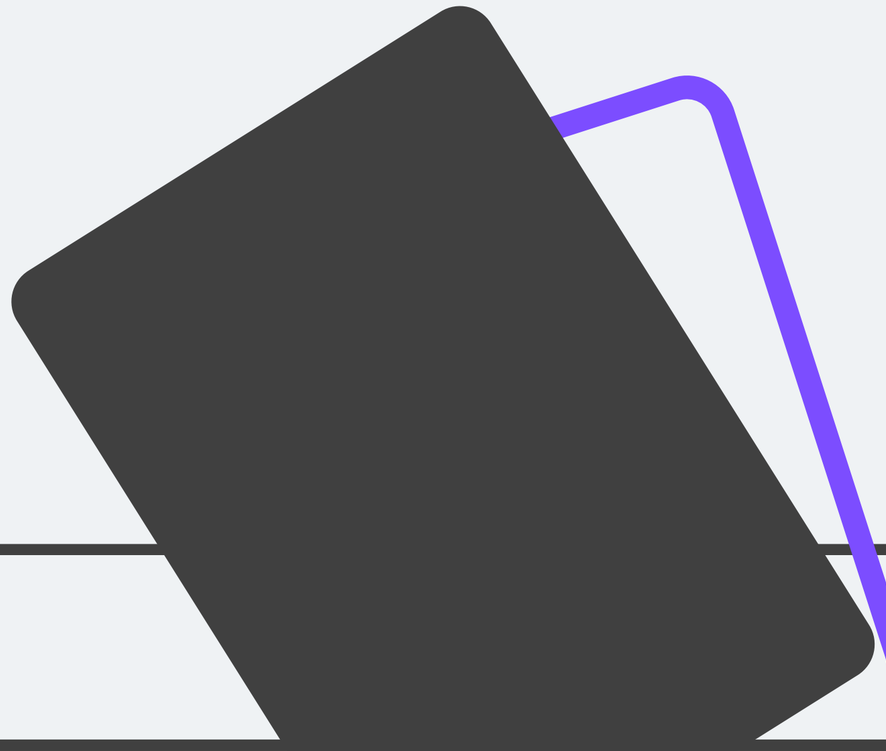
User retention is directly linked to app design

#2

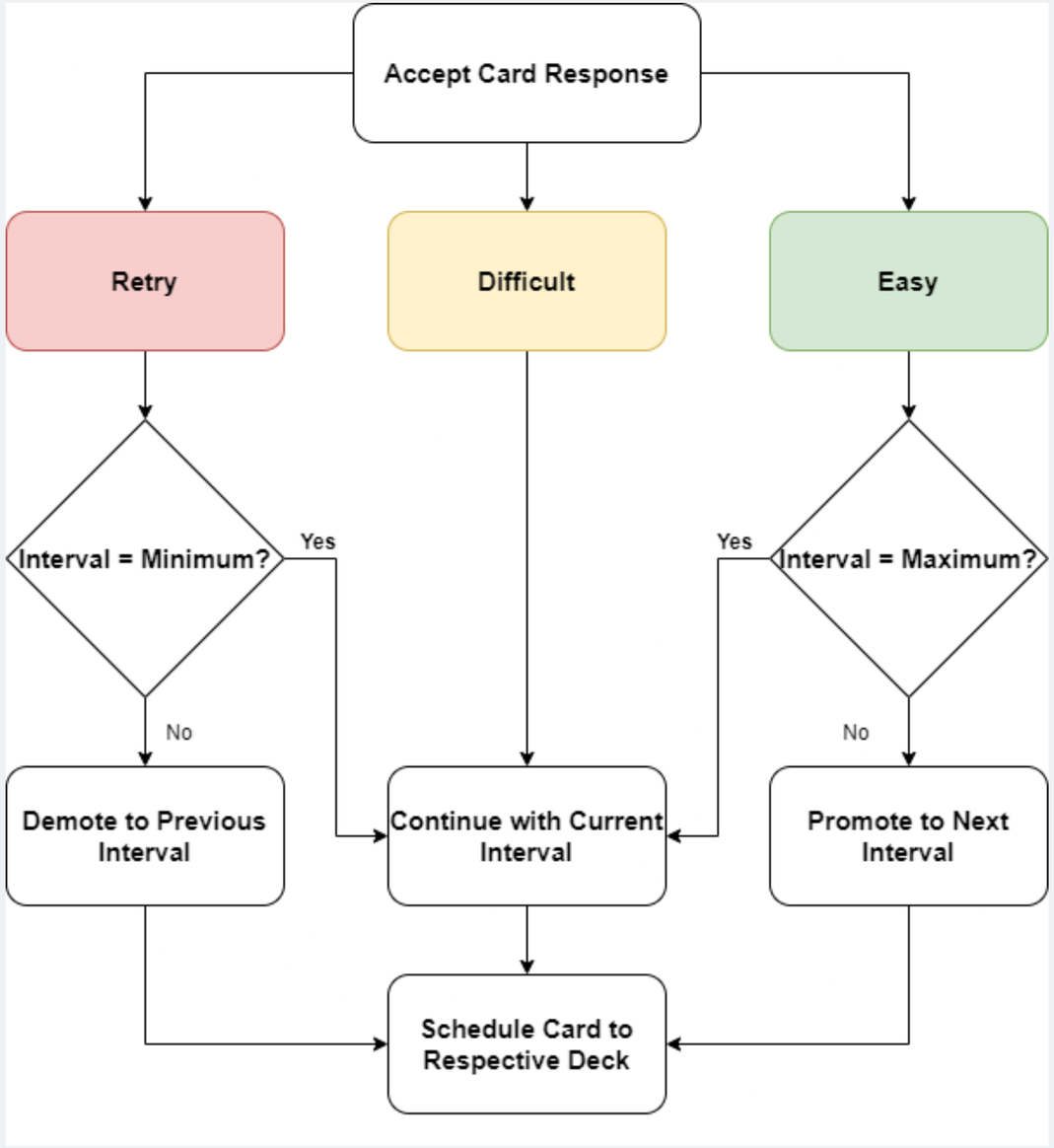
Game-like elements help keep the user engaged and compete with others leading to good academic habits

EXISTING ARCHITECTURE: CLOZEMASTER

C.M Mike



PROPOSED SYSTEM



SPACED REPETITION SYSTEM

- Designed from scratch.

- Inspired by Ebbinghaus' Forgetting Curve and SM2 Algorithm.

- Integrates acqusition and maintainance cards.

ADAPTIVE LEARNING ALGORITHM

- Designed from scratch.

- Adapts to the individual and provides personalization

- Provides a massive amount of dataset to tweak testing

Paper Publication

- Presented at ICDLAIR 2021, Salerno Italy
- Publishing under LNNS Springer

PROBLEM

- Techniques are rudimentry and ineffective.
- Promote short-term mugging up.

SOLUTION

- Spaced repetition + adaptive learning algorithm.

IMPACT

- Focus on long-term memorization.
- Making memorization a passive process.

SUMMARY

- "Adaptive Learning and Analytics in Engineering Education" - Rajesh C. Panicker, Akash Kumar, Deepu John, Dipti Srinivasan.
- "Recognition and Application of Learner's Cognitive Ability for Adaptive E-learning" - Bingxue ZHANG, Yuxiang LI, Yang SHI, Longfeng HOU.
- "Using Spaced Repetition and Gamifcation to Enhance K-12 Student Science Literacy with On-Demand Mobile Short Reads" - Martin K.-C. Yeh, Abtin Toshtzar, Laura Guertin, and Yu Yan.
- "A Trainable Spaced Repetition Model for Language Learning" - Burr Settles, Brendan Meeder.
- "Personalized adaptive learning: an emerging pedagogical approach enabled by a smart learning environment" - Hongchao Peng, Shanshan Ma, and Jonathan Michael Spector.
- "Implications of Short-Term Memory Research for the Design of Spaced Repetition Based Mobile Learning Games" - Florian Schimanke, Robert Mertens, Sophie Ribbers, Oliver Vornberger.
- Anki Frequently Asked Questions - https://faqs.ankiweb.net/what-spaced-repetition-algorithm.html
- SuperMemo Algorithm - https://www.supermemo.com/en/archives1990-2015/english/ol/sm2.
- Clozemaster Frequently Asked Questions - https://www.clozemaster.com/faq.
- Duolingo Frequently Asked Questions - https://support.duolingo.com/hc/en-us.

REFERENCES

Thank You