

What NLP+Education paper am I presenting today?

KARL: Knowledge-Aware Retrieval and Representations aid Retention and Learning in Students

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Where's the paper?

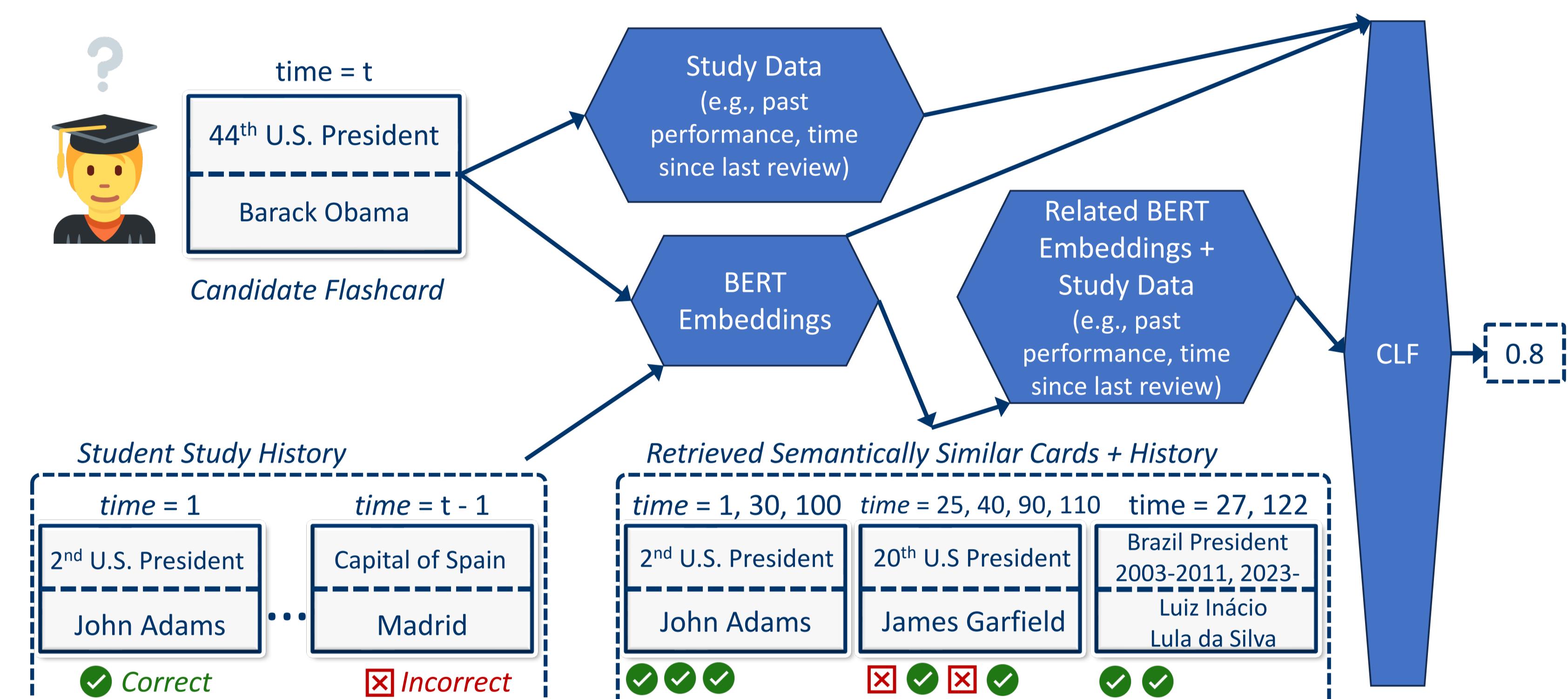


Flashcard schedulers ignore the text on flashcards. We fix this with **KAR³L+Δ**, a content-aware scheduler that helps **567 learners** study trivia more effectively.

Content-aware flashcard scheduling using BERT + retrieval

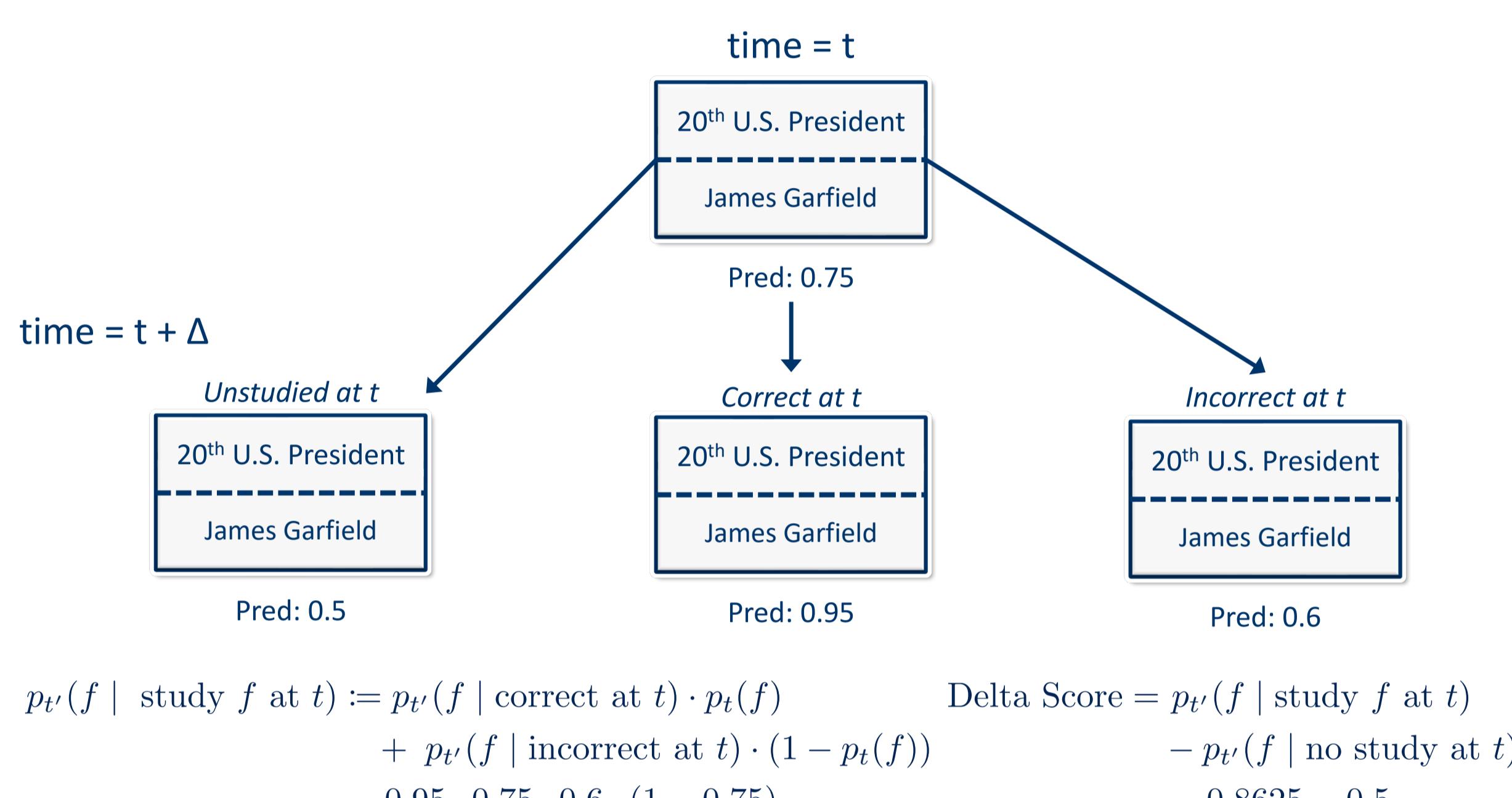
What is the KAR³L Student Model?

Predicts probability of a student recalling a flashcard at time t



What is the Δ teaching policy?

Uses student model predictions to decide what flashcard to show next



Flashcard App: We developed a flashcard app to test **KAR³L+Δ** and other schedulers in an online setting

Front—Identify Contribution 1

How does KAR³L+Δ create content-awareness in flashcard scheduling?

Recommended – Type Answer (Press any letter to focus)

Answer

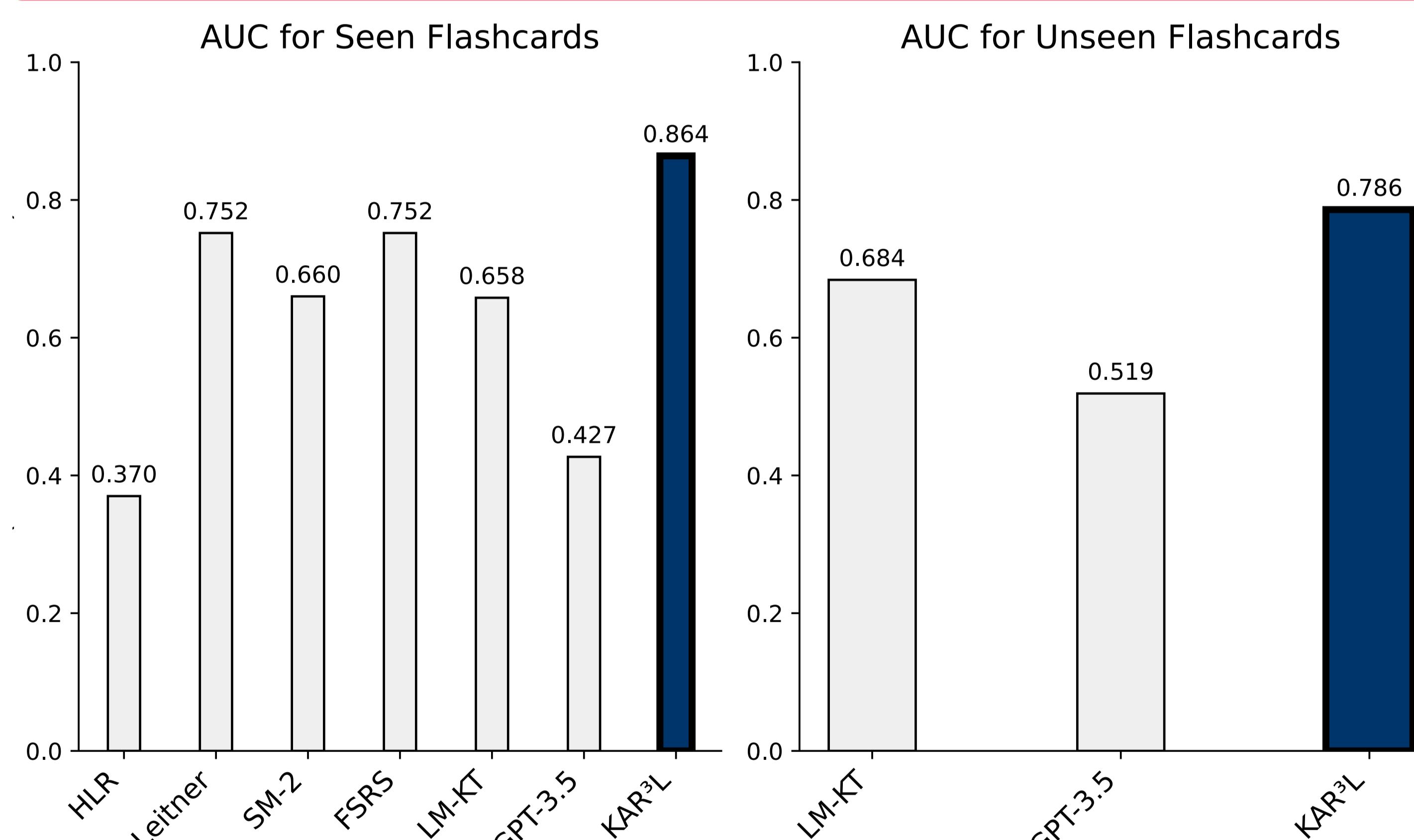
KAR³L+Δ's KAR³L student model uses the BERT language model to understand flashcard text and identify similar flashcards.

With this information, KAR³L predicts recall probabilities.

Optional – Retype Answer (Press any letter to focus)

WRONG ([]) RIGHT ([])

Offline Study: KAR³L student model outperforms for both previously **seen** and **unseen** cards



Online Study: KAR³L+Δ users have comparable accuracy but higher **testing throughput**

Dataset: We release the first long-term flashcard study dataset with **flashcard text** and **123,143** study interactions



View Dataset on Hugging Face!

Find Our Code on Github!

Try Our Flashcard App!

