

What NLP+Education paper am I presenting today?

Where's
the paper?

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

Matthew Shu Nishant Balepur Shi Feng Jordan Boyd-Graber



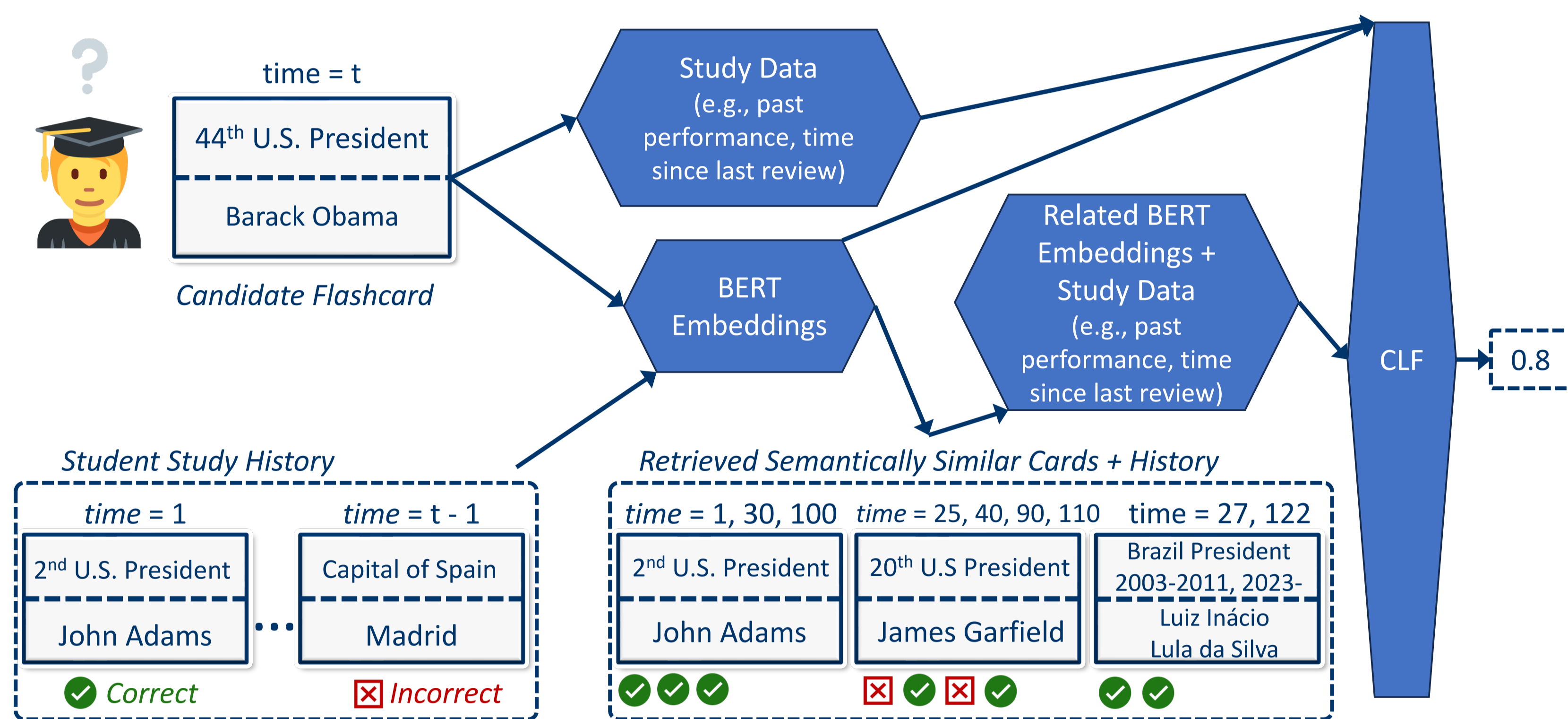
Flashcard schedulers ignore the text on flashcards.

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

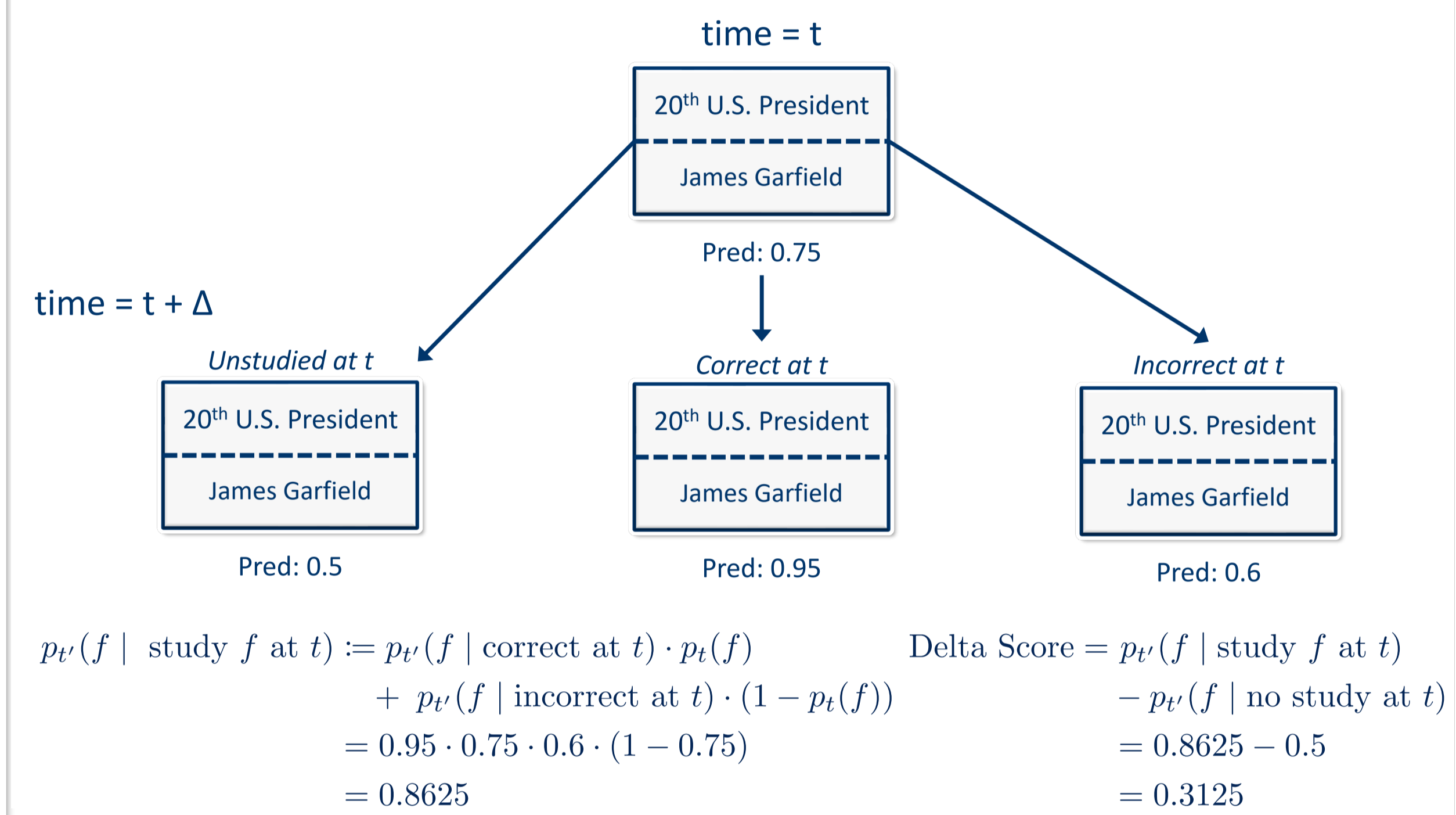
What is the KAR³L Student Model?

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 ()

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



View Dataset on
Hugging Face!

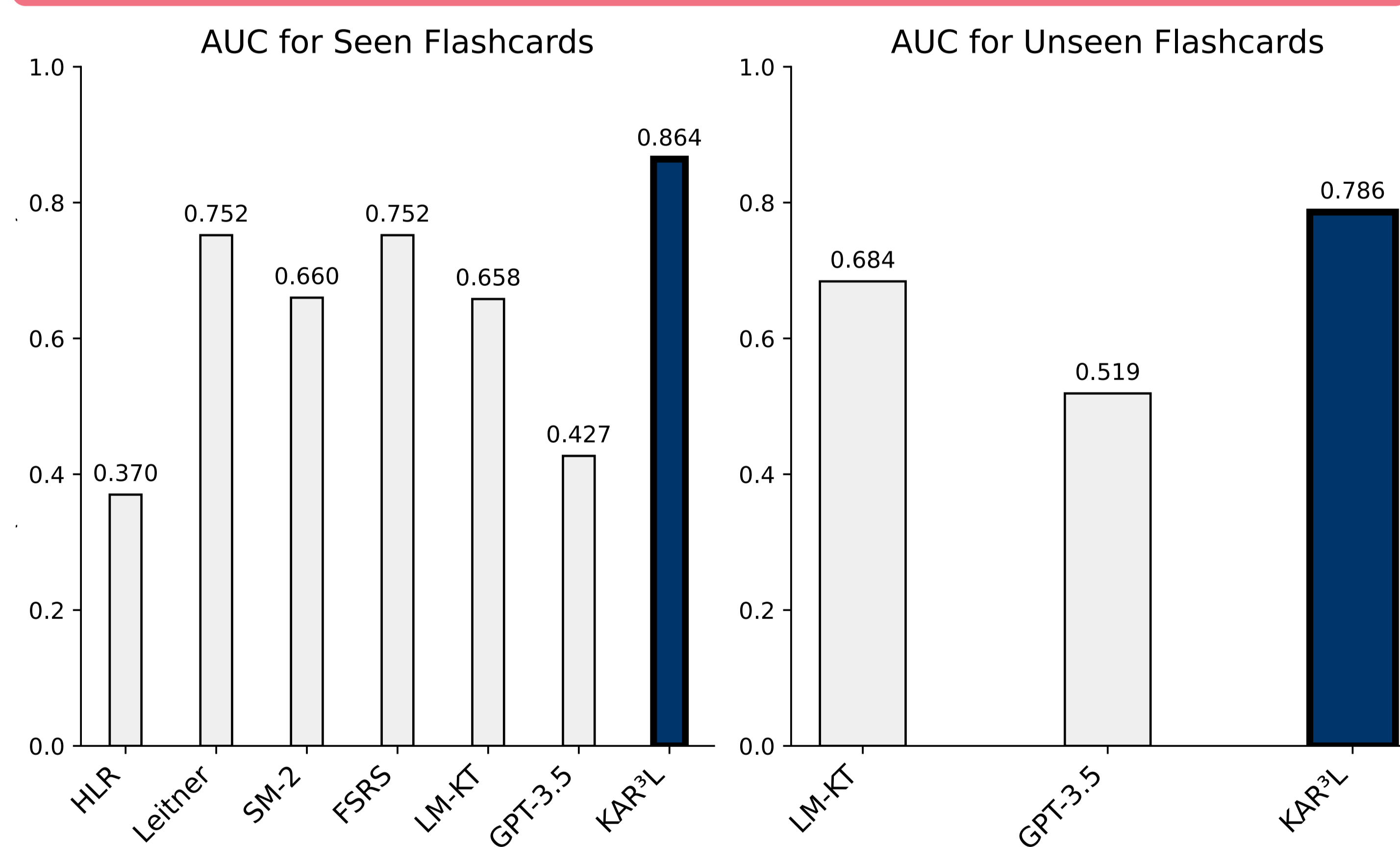


Find Our Code
on Github!



Try Our
Flashcard App!

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**

