MediCheck: AI-Personalized Medication Advisor

Presented by Jimmy Baek, Hunter Qin

Problem Statement: Medication Literacy is Critical, but it is prevalent and can lead to life-threatening complications.

Medication Literacy

- **⅓ of Patients** have low medication literacy, making it 3.4x more likely for them to interpret medication warning labels incorrectly
- **Older and less educated patients** have a higher risk of lower medication literacy (Plaza-Zamora, et al. 2020)

Lack of Digestible Documentation On Warnings, Precautions, Tailored to Individuals

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ML-Based Medication Recognition

"Dayquil, Nyquil..." OR 

RapidFuzz
PyTorch
Vector Embedding (Lexical Similarity)
openFDA K-Nearest Neighbors Search of Dataset

3 Most Likely Matching Medications, User Chooses One

Augmented LLM for Personalized Medication Guidance

openFDA
Drug Facts
Warnings
Adverse Effects
Dosage
Ingredients

AND

Age:
Gender:
Pregnancy Status:

ex) PROMPT: "Here is the patient profile. Translate the FDA medication data, tailor to the user's literacy level."

Llama 3 From Meta

Amazon SageMaker

Medication Summary with ingredients, purpose, dosage, side effects, warnings
Tailored to **User's Reading Level** and **patient health profile**

Interaction Checker

openFDA
Drug Interactions Data

+

Current List of Medications

ex) PROMPT: "Here is the list of medications they're currently taking. Use FDA data to check for interactions, tailor to the user."

Llama 3 From Meta

Amazon SageMaker

Personalized check for interactions on a medication, update patient profile with new medication

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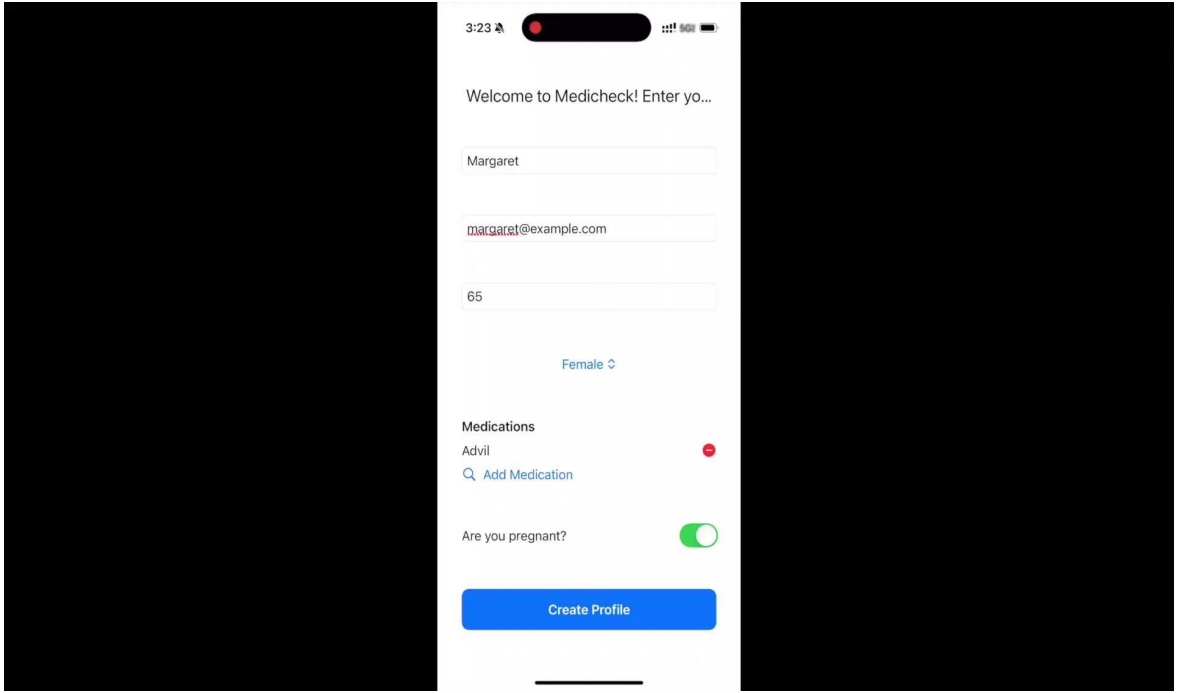
Demo 1: Pregnant Woman + Finasteride?



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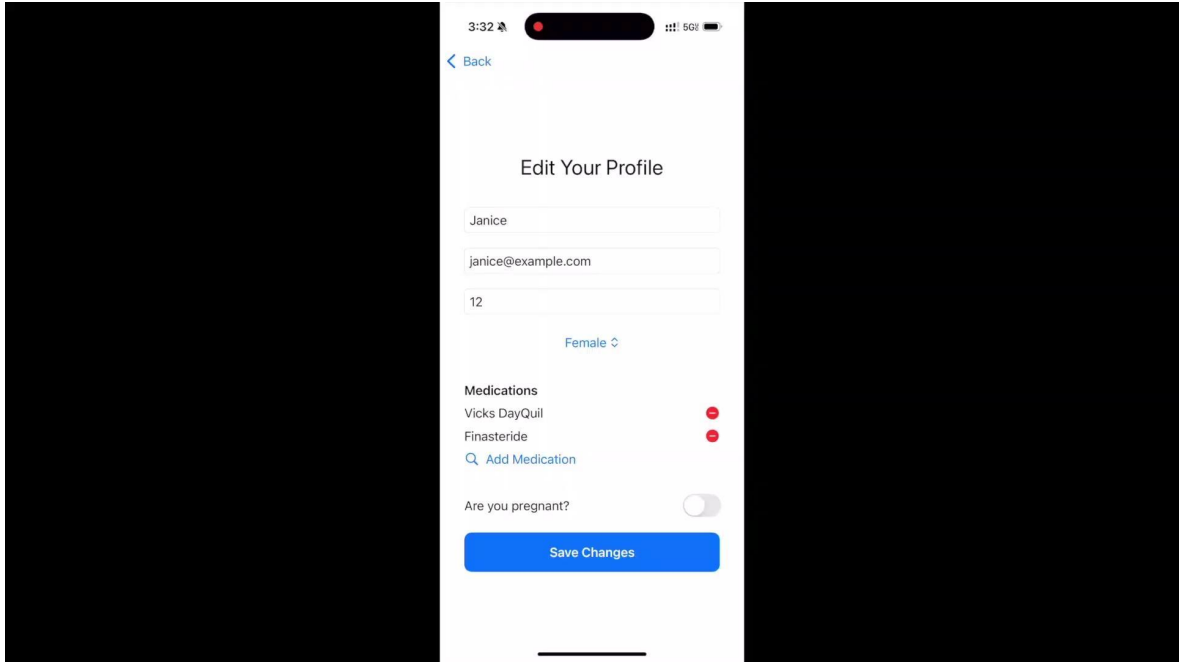
Demo 2: Medication Recognition w/ Photo + 12 year old user



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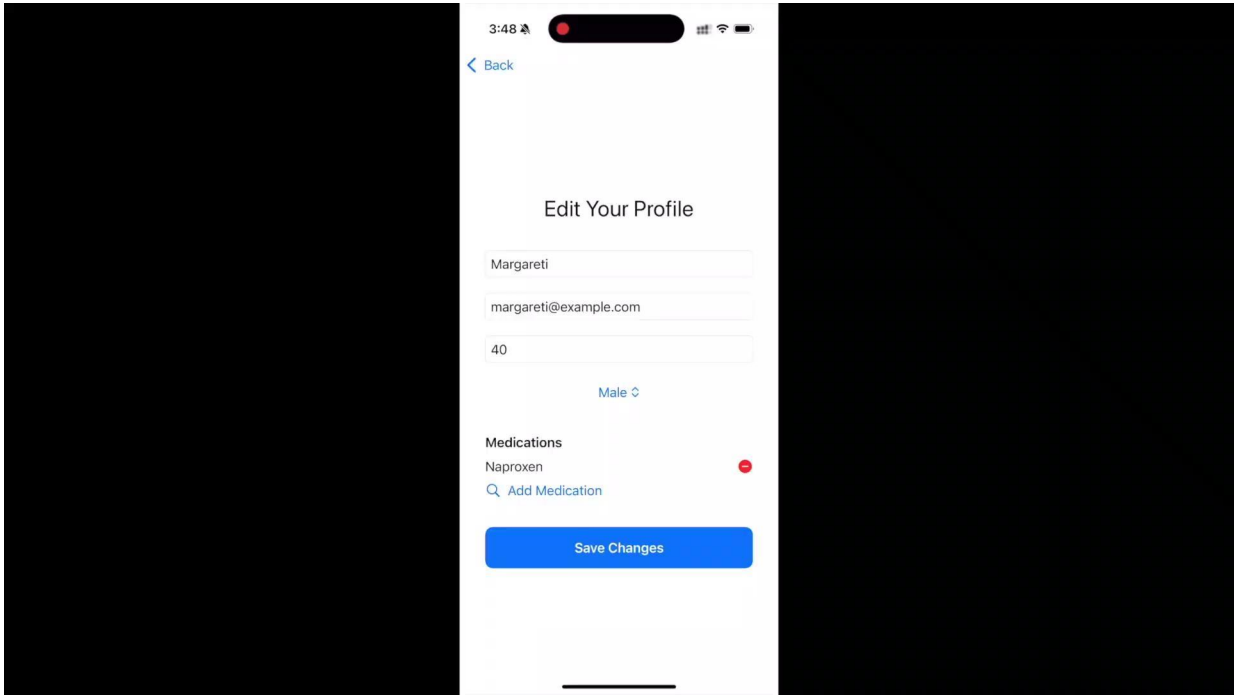
Demo 3: Interaction Checker



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Next Steps:

- Prompt Differentiation
- Allergy Checking
- graphRAG: Using a Knowledge Graph generated from FDA Corpus
- Methodical Evaluation through Test Dataset:
  - developing information coverage metric, employing reading level metrics, reliability metrics