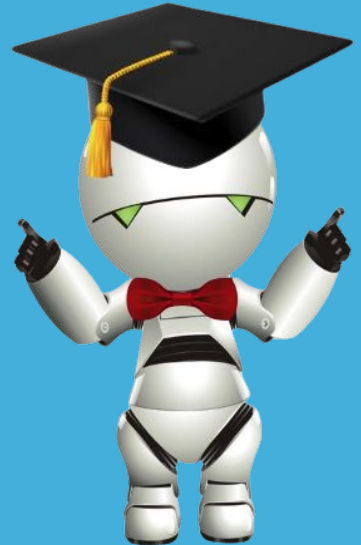


Professor Marvin

EECS 449

The Martians



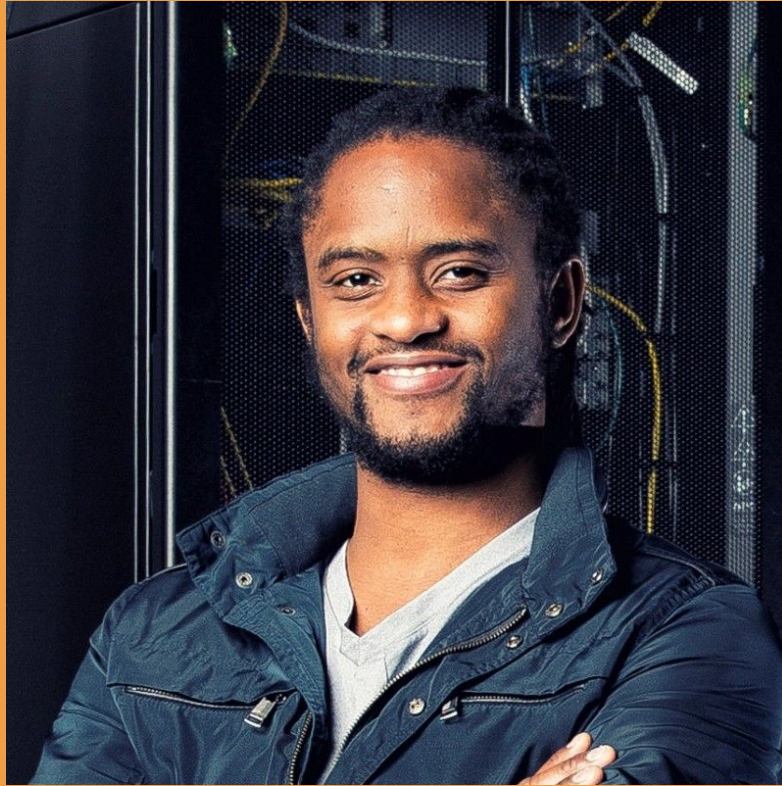


Meet the Martians



■ Why are we here?

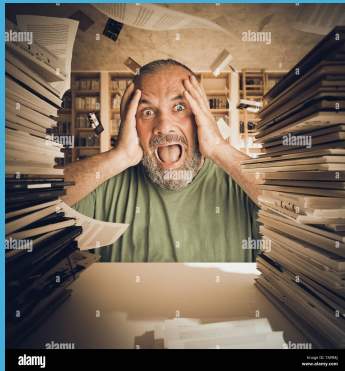




“It’s all about the grock” - Jason Mars

Who likes studying?

- Studying...
 - Sucks
 - Is inefficient
 - Is too time consuming
- Too much information to shuffle through
- Spend too long finding the info you need



rolled our eyes at Bannon, who started to get weirder and weirder after the investment. But we thought we just had to placate his niche political obsessions to achieve our potential at creating something revolutionary in science. The ends would justify the means, we kept telling ourselves.

He started traveling to London more frequently, to check on our progress. One of those visits happened to be not long after we launched the app. We all went into the boardroom again, with the giant screen at the front of the room. Jucikas made a brief presentation before turning to Bannon.

"Give me a name."

Bannon looked bemused and gave a name:

*Okay. Now give me a state

"I don't know," he said. "Nebraska."

Jucikas types in a query, and a list of links popped up. He clicked on one of the many people who went by that name in Nebraska—and there was everything about her, right up on the screen. Here's her photo, here's where she works, here's her house. Here are her kids, this is where they go to school, this is the car she drives. She voted for Mitt Romney in 2012, she loves Katy Perry, she drives an Audi, she's a bit basic...and on and on and on. We knew everything about her—and for many records, the information was updated in real time, so if she posted to Facebook, we could see it happening.

And not only did we have all her Facebook data, but we were merging it with all the commercial and state bureau data we'd bought as well. And imputations made from the U.S. Census. We had data about her mortgage applications, we knew how much money she made, whether she owned a gun. We had information from her airline mileage programs, so we knew how often she flew. We could see if she was married (she wasn't). We had a sense of her physical health. And we had a satellite photo of her house, easily obtained from Google Earth. We had re-created her life in our computer. She had no idea.



■ Current “solutions” don’t really work

- Search Engines
 - Not task specific
 - Returns lots of useless information
- Quizlet
 - Sometimes task specific
 - People must manually enter information
- Private Tutors
 - Effective and task specific
 - Expensive and inaccessible for many students

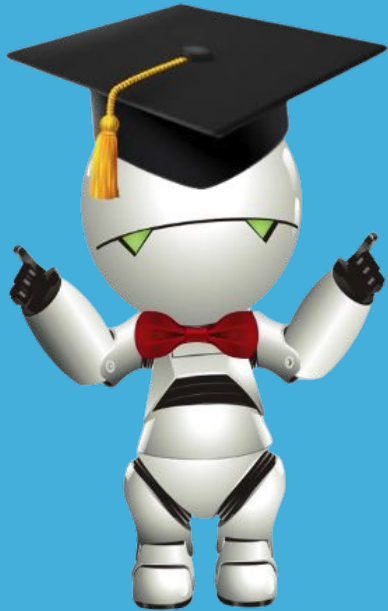


DEMO

Let's take a look at how Professor Marvin is used

Our solution: Professor Marvin

We offer improvements on the study workflow



Works well classes becoming increasingly digital

Upload all your relevant PDF files

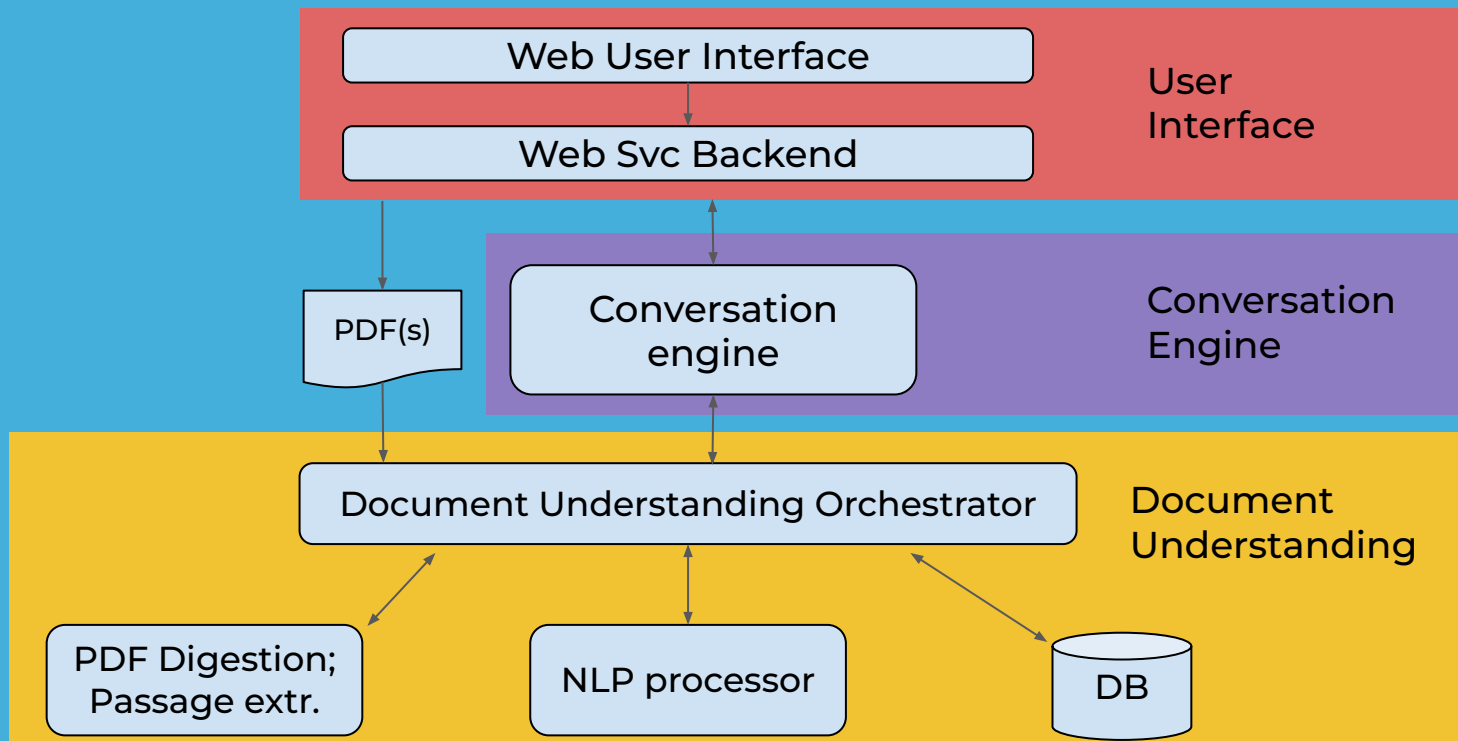
Get asked questions to test your understanding

Automatically creates summaries for important passages

How did we do it?

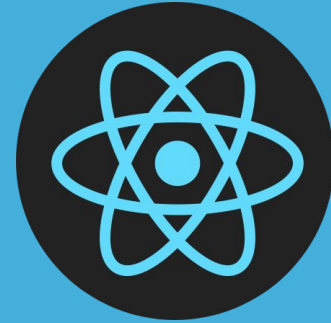
Let's take a look at how Professor Marvin works

Architecture



User Interface

- React Frontend + Flask API Backend
- Subtle UX fixes
 - Fade in animations
 - Dynamic buttons
 - Automatic scrolling
- “User-proofing”
 - Reject non-PDF files
 - Disable buttons automatically
- Scrapped Features
 - Speech-To-Text
 - Firebase User Login

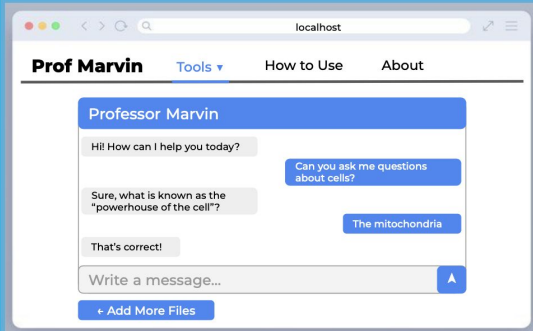
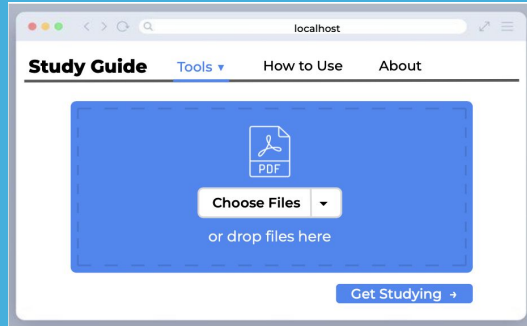


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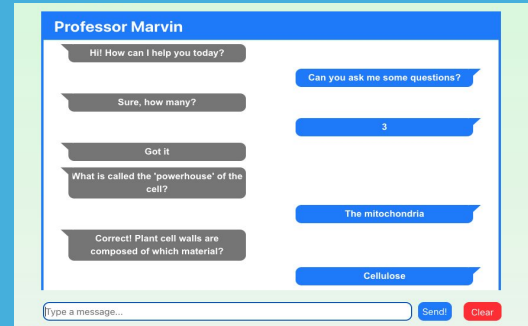
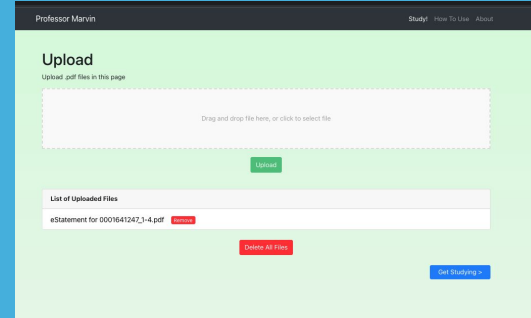


Vision vs. Implementation

Concept



Final Product



1.

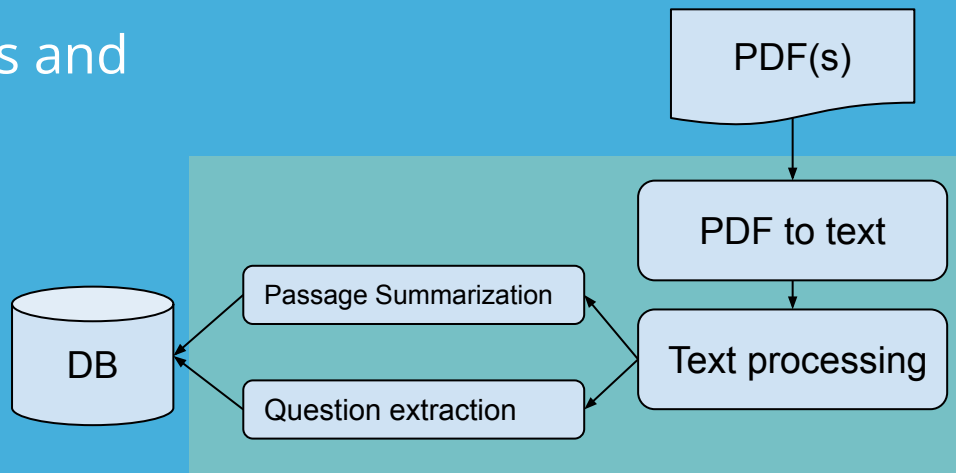
TRANSITION HEADLINE

Let's start with the first set of slides

■ Program structure: PDF Understanding

Goal: Pull out useful information from PDF documents

- Find text information from PDF document
- Segment text into passages
- Extract summaries, exercises and



NLP Functionality

- Text Summarization using Facebook's BART model
- Question generation model uses pre-trained seq-to-seq models

Input text

Jason Mars (Born May 27, 1983) is an American [computer scientist](#), author, and entrepreneur. He is best known for his research into [computer architecture](#) and [artificial intelligence](#), particularly in the design and deployment of [conversational AI](#). The best-selling author of *Breaking Bots: Inventing a New Voice in the AI Revolution*, he has been involved in multiple AI initiatives and startups over the course of his career, including ZeroShotBot, Jaseci, Clinc, Myca, and ImpactfulAI.

Mars holds a PhD in Computer Science from the [University of Virginia\(UVA\)](#), and is currently employed as an Associate Professor of [Computer Science and Engineering](#) at the [University of Michigan\(U-M\)](#).^{[4][5]} He is also acting co-director of U-M's Clarity Lab alongside his wife, Professor Lingjia Tang.^[6] There, Mars helps direct advanced research within artificial intelligence, [large-scale computing](#), and [coding](#). Among the lab's most notable projects is the [open source](#) Sirius, later rebranded as Lucida.^[7]

A [virtual assistant](#) capable of understanding both visual and auditory queries, Lucida was intended by Mars and his colleagues as a sandbox that would help programmers explore the complexities of speech recognition. Mars also hoped that it would act as a foundation for the development of hardware better-suited for conversational AI.^[8] The project was supported by [Google](#), the [Defense Advanced Research Projects Agency \(DARPA\)](#), and the [National Science Foundation](#).^[9]

Jason Mars was one of ten individuals celebrated at the 28th Annual Caribbean American Heritage (CARAH) Awards. Mars received the Vanguard Award from the Institute of Caribbean Studies for his technological impact and "contributions to America and the world."^[1] Other winners include Pfizer Principal Scientist for Viral Vaccines Vidia Roopchand and Grammy-winning songwriter [Gordon Chambers](#). Past honorees of the CARAH Awards include former United States Attorney General [Eric Holder](#), former United States Ambassador to the United Nations [Andrew Young](#) and Olympian [Usain Bolt](#).^[10]



Q/A Pairs

```
"qas": [
  {
    "answer": "Jason Mars",
    "question": "Who is an American computer scientist, author, and entrepreneur?"
  },
  {
    "answer": "computer architecture and artificial intelligence",
    "question": "What is Jason Mars best known for?"
  },
  {
    "answer": "28th Annual Caribbean American Heritage (CARAH) Awards",
    "question": "At what event was Jason Mars honored?"
  },
  {
    "answer": "Vanguard Award",
    "question": "What award did Jason Mars receive from the Institute of Caribbean Studies?"
  },
  {
    "answer": "Gordon Chambers",
    "question": "Which Grammy-winning songwriter was a winner of the CARAH Awards?"
  },
  {
    "answer": "ZeroShotBot, Jaseci, Clinc, Myca, and ImpactfulAI",
    "question": "What AI initiatives has Jason Mars been involved in?"
  },
  {
    "answer": "University of Virginia",
    "question": "Where did Jason Mars receive his PhD in Computer Science?"
  },
  {
    "answer": "Professor Lingjia Tang",
    "question": "Who is Jason Mars' wife?"
  }
]
```


■ Conversation Engine

- Gives useful information to user
- Conversation is quick and natural feeling
- Preload data about each document as it is uploaded
 - Reduce latency
- The future of study tools

Thank You!

Questions?
