Creating
Dr. Bill

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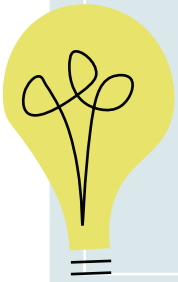
Framing the Experience

Ideation & Brainstorming



Our team first thought about the daily lives of Georgia Tech students. What interactions can we improve with voice? We came up with a list of ideas and asked friends what they thought.

Initial Brainstorm:

1. Voice to text chemistry equation editor

2. Voice access to get into secure buildings around campus

3. Add voice functionality to the bus app

4. Voice Interview Prep

We chose a voice interview application because Tech students are highly career driven. The entire experience of college is to prepare you to get a job. This is also an experience that relies heavily on speaking that students have difficulty with.

Framing the Experience

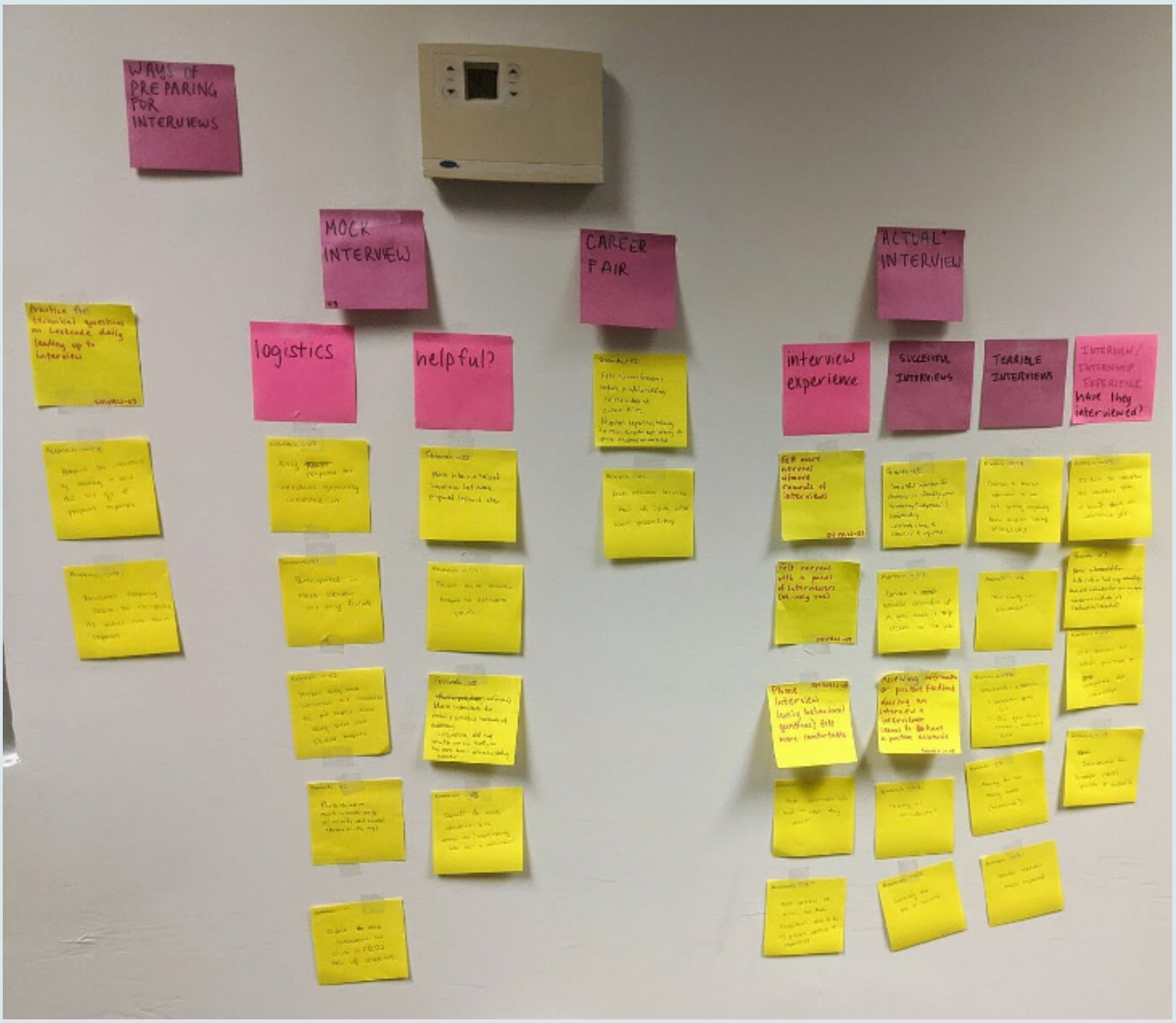
We then conducted a contextual inquiry to learn more about what the current interview experience is like for students.

We interviewed twelve students who were either studying Computational Media or Computer Science.

Each person was asked 10 questions about how they prepare for interviews, what types of questions they find difficult, what it is like talking to recruiters, and what they consider to be a successful or terrible interview. We also asked what they were most concened about for future interviews and how comfortable they are with public speaking.

We synthesized the data into an affinity diagram which we used to create our identity model.

Affinity Diagram



We had collected a lot of data on students who had very different feedback and had to find a way to make sense of it all.
By synthesizing data in the affinity diagram, we were able to then identify key characteristics of students. We realized that there were three distinct ways of preparing for interviews: alone, using onling resources, and with friends.

Identity Model

We had to look at our data and select what we thought were the most important aspects of the current interview experience. The filtered data is represented below in our identity model. This model also captures how students who are at different stages of their college career (searching for internships, full time, secured a job) feel about the interview process.

I am	I practice	I feel
Internship seeking student I am a student searching for an internship since I am not yet graduating.	**Social Prepper** When I prepare for interviews, I ask my friends to do a mock interview with me. I ask them to ask both behavioral and tech questions. I make note of the feedback my friends give me with what I can do better.	**Brimming Confidence** I have several interviews under my belt and am no longer nervous. I know exactly how to go about talking with recruiters and answering interview questions. I know that it is still early and I have time to find an internship.
Full time job seeking student I am a fourth year student who is searching for a full time job. I have previously interviewed for internships. Because I am almost done taking classes, I have learned many technical skills/concepts.	**Online Prepper** I practice for technical coding questions by going on LeetCode and watching videos on Youtube about the most popular coding questions for Google, Facebook, Amazon, etc.	**Nervous Wreck** I am nervous since I am still looking for a full time job, and want to make sure I get a job at a company that I am excited about.
Student with a secured full-time job I am a 4th year CS student who has a full-time SWE job lined up for next fall.	**Solo Prepper** When I prepare for interviews, particularly the technical portion, I use Leetcode for practice coding questions. For behavioral interviews, I like to simply read over my resume and make mental note of some key points I could talk about.	**Slight Nervousness** I am particularly nervous about losing my technical interviewing skills while I'm working full-time. While in college, I feel a bit more prepared for tech interviews due to my CS coursework that sometimes correlates with technical interview questions, but being in industry will be different and I'm worried that my technical question skills will get rusty.

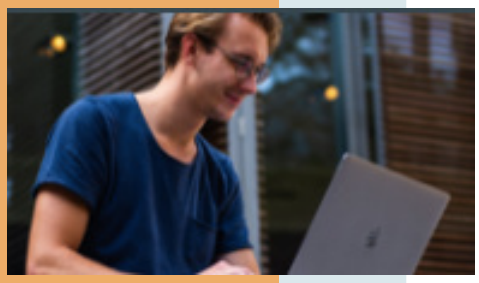
Personas

In order to ensure that we are always designing for the end user, we developed three student personas which we have repeatedly come back to throughout the semester.

Billie
Age: 22

- Just graduated
- First-year in industry as a software engineer
- Considering other job options
- Afraid she will have lost technical interviewing skills while in industry
- Wants to retain technical interviewing skills while on the job

Bob
Age: 20
3rd year CS student



- Doesn't know much about professional development
- Nervous and intimidated of talking to recruiters
- Just finished his core CS classes
- Not confident about his technical skills
- Wants to land an internship for the summer

Emma
Age: 22
4th year CM Student

- Wants a full time a software engineering job
- Comfortable talking to recruiters at career fair
- Has various relevant projects and work experience to talk about.
- Nervous for interviews because she took algorithm design and data structures years ago and has forgotten the material

Scenario

The next step was to envision what scenario our product would be useful for. We spent a lot of time debating what the key use case would be. Was it the inexperienced first year looking for an internship? Was it the fourth year looking for a full time job? We went back to our identity model and personas for ideas. We wrote the following scenario in a storylike format to personify who our user would be.

Mob (they/them) went to the COC career fair and spoke to recruiters from their dream company, Microsoft. Mob is a third year student. They are still looking for an internship that they hope will convert to a full time job. The conversation with the recruiter went well and after applying online, the recruiter reached out to Mob to offer Mob an interview. The interview is a few weeks out, but Mob wants to put their best foot forward. They decide to start preparing immediately. Mob looks up interview questions on Glassdoor and feels like they need to brush up on their technical skills and make sure that they can explain their resume. Mob's friends, however, are all business majors and don't have any technical interviewing skills, so they can't help Mob practice. Mob cries for a bit before realizing they can practice by themselves online. Mob goes onto LeetCode for at least half an hour every day before their interview and does as many coding questions as they can. When Mob gets to the interview, they are caught a bit off guard by some of the questions (both technical and behavioral) asked by the interviewer and they found themselves struggling to express their answers. Mob thinks that they would have felt better if they had practiced interviewing more beforehand.

Filtering the Experience

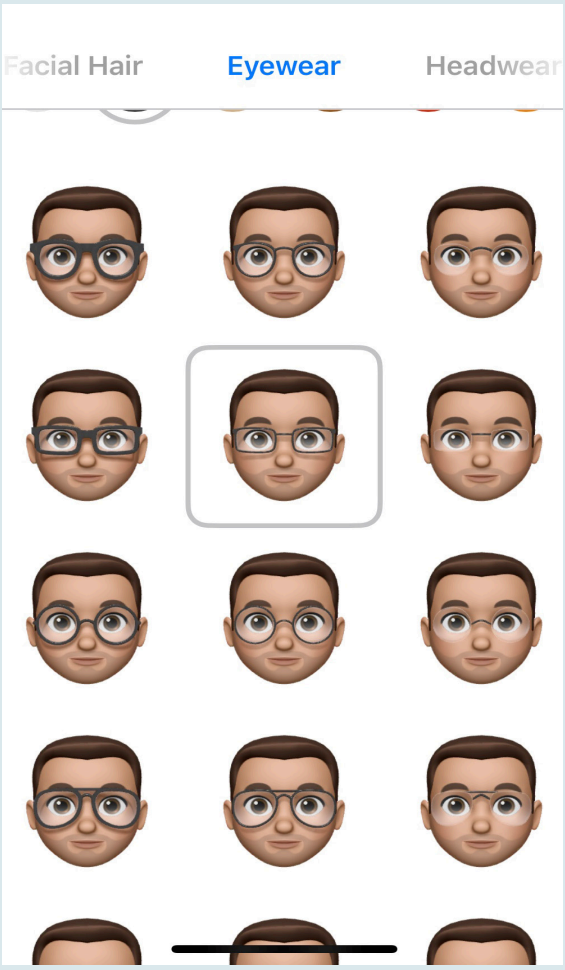
Back to ideation

Our next task was to design a system persona. We went back through the data we had originally collected and thought about what people considered a good and bad interviewer as well as a good mock interview.

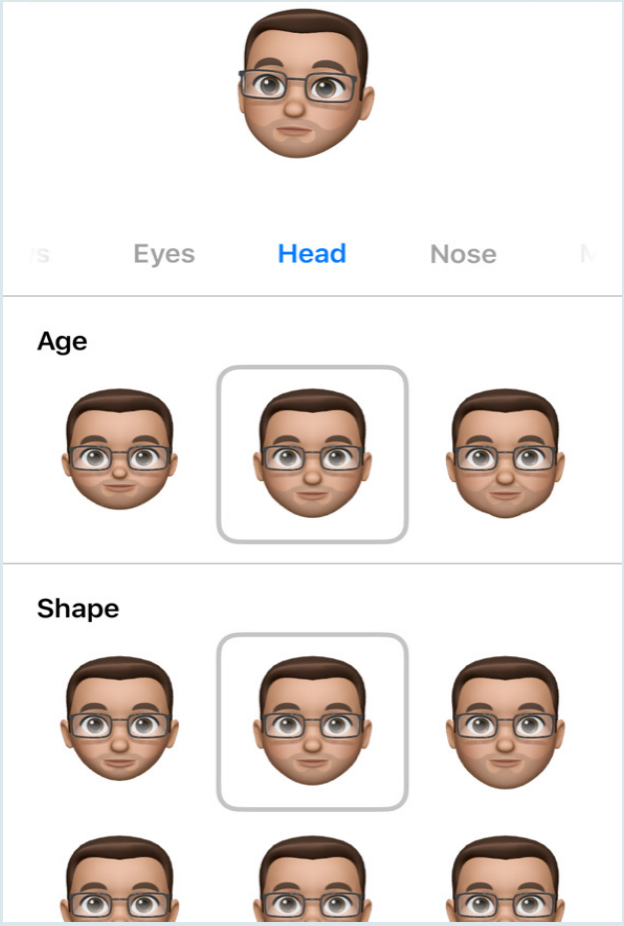
Key notes from our data:

- Students were not doing mock interviews because they felt too informal
- 7 out of 12 students disliked "poker faced interviewers" because they're "difficult to decipher"
- Stressful when interviewers were "impatient" in waiting for an answer
- Mock interviews with friends were not useful because friends did not have technical expertise

System Persona



We designed our system persona Dr. Bill according to our research on what makes a good interviewer. There was uncertainty about what our system persona should look like. There was a lot of internal discussion on if the system persona should be a male, female, or rotate every time the user started a practice interview.



We went back and interviewed the 12 people we had originally interviewed to gather more data. We went through many options to modify Bill's physical appearance.

System Persona

We then finalized our system persona.

Bill, a expert software engineer, is a hiring manager who works as a leader for a team at a tech company. They have been a long-time employee of the company, as they have started as a software developer and worked their way up to the top as a team lead. They have a strong technical background, a firm foundation in CS topics, and they have interviewed hundreds of candidates for entry-level software engineering jobs. They have also given plenty of information sessions to college students and frequently attend career fairs. If they recommend a student for a position, their colleagues trust that the candidate is one of the best.

Personality:

- Active listener
- Profesional
- Polite
- Encouraging
- Non-discriminatory
- Patient

Characters that Bill Embodies:

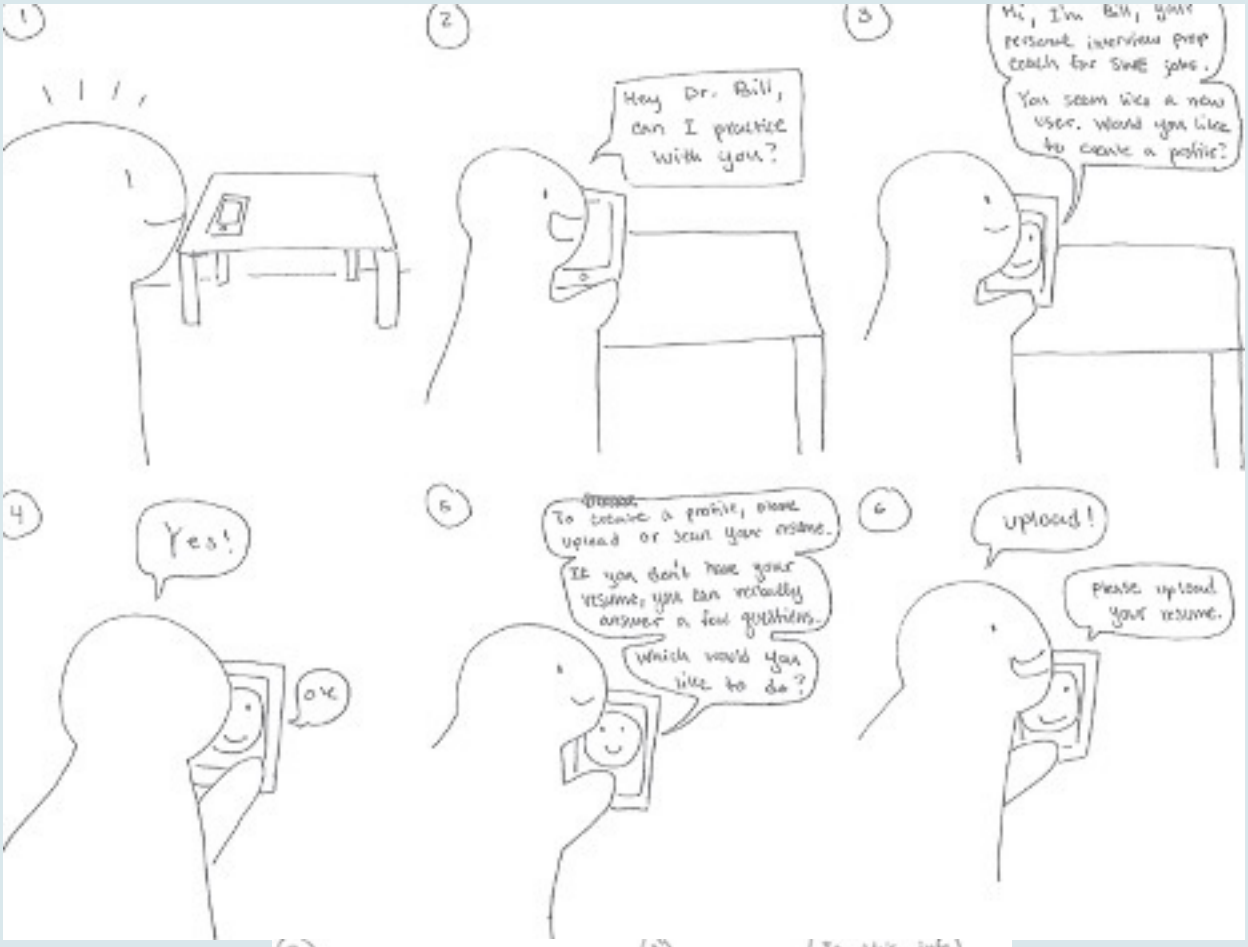
- Recruiters
- Software Engineering/Hiring Managers with developer experience
- C2D2 Organizers - people who host the mock interviews at Georgia Tech

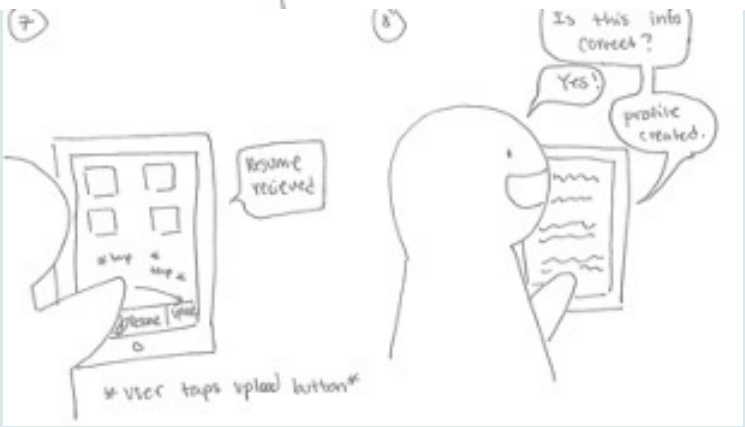
Voice:

US Male Matthew from https://ttsmp3.com/

Storyboard: Beginning

We created storyboards showing key interactions between a user and our system person. Our first storyboard shows a student in their dorm deciding that they want to have a practice interview.

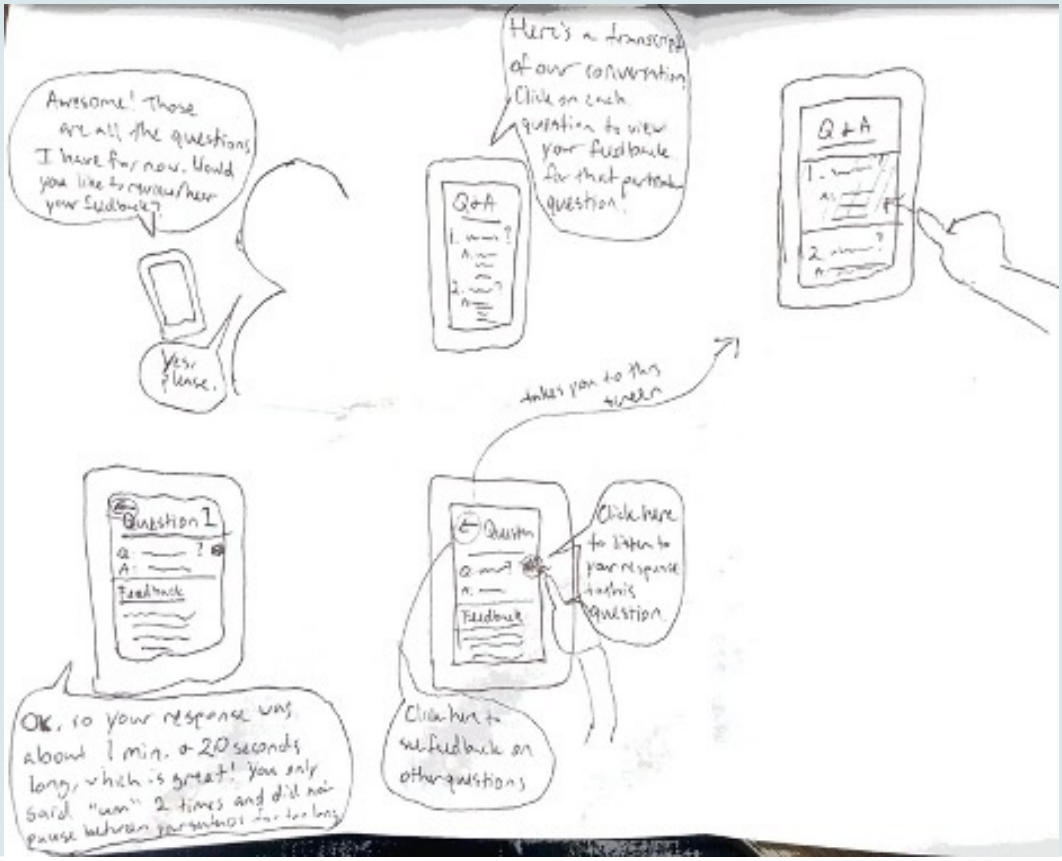




Storyboard: The Middle and Consummation

The second storyboard shows a user being asked practice questions.

The third storyboard shows a user reviewing their interview feedback.



Conversation Design

Using our storyboards, we created a sample dialog which animates the key interactions of our system

User	Hey Dr. Bill, can I practice with you?
System	Hi! I'm Bill, your personal interview prep coach for software engineering jobs. You seem like a new user. Would you like to create a profile?
User	Yes!
System	To create a profile, please upload or scan your resume. If you don't have your resume, you can verbally answer a few questions. Which would you like to do?

User decides to upload resume

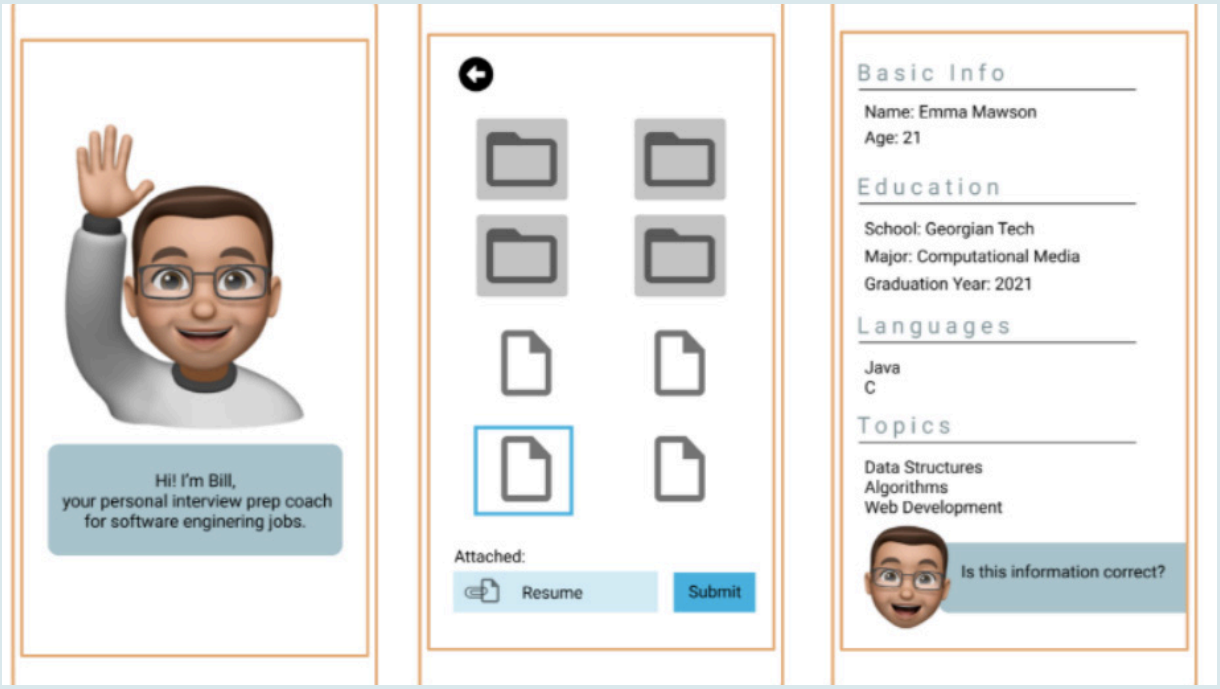
User	Upload.
System	Please upload your resume.
User	**uploads resume file & clicks upload button**
System	Resume received. Is this information correct?
User	Yes!
System	Profile created.
User	I want to practice interview now

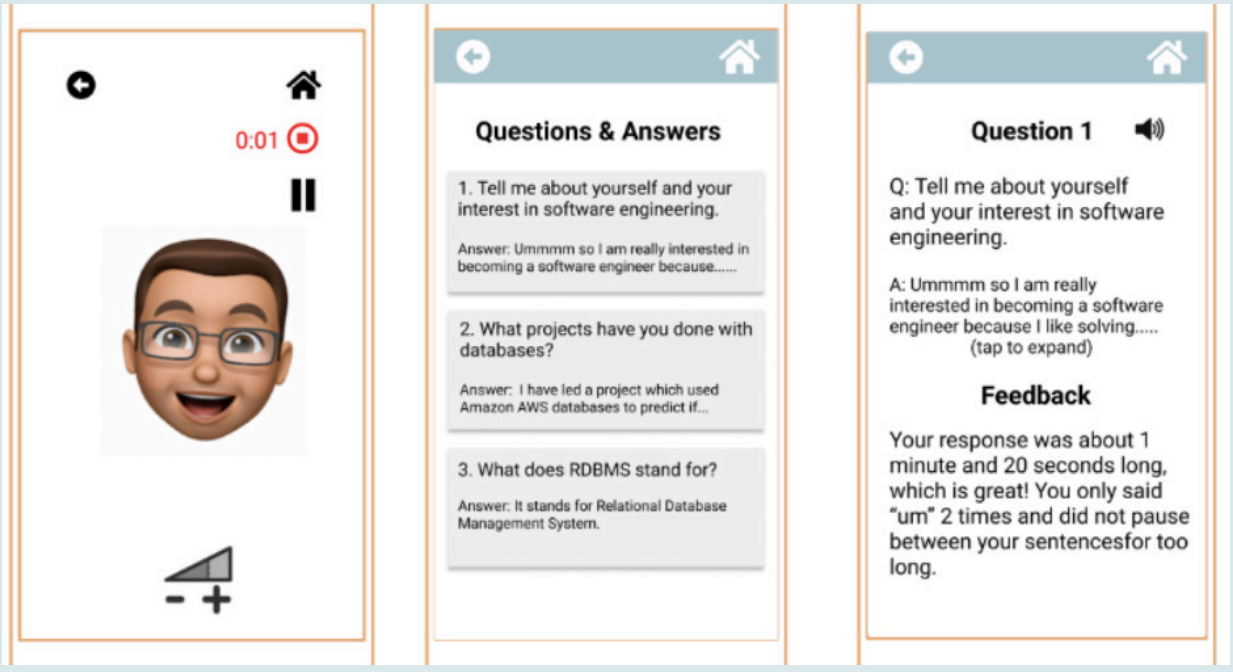
Conversation Design

System	Okay! How much time do you have today?
User	15 minutes.
System	Do you want behavioral or technical questions or both?
User	Both.
System	Ready to begin?
User	Yes.
System	My name is Bill! I am a hiring manager here at Amazon. Why don't we start with you telling me a bit about yourself and your interest in software engineering?
User	Ummmm so I am really interested in becoming a software engineer because I like solving problems algorithmically and software engineering involves using logic to systematically solve puzzles. I have been coding for a few years and have done a few projects involving database management.
System	What projects have you done with databases?
User	I have led a project which used Amazon AWS databases to predict if a user profile is likely to pay for a clothing subscription service. I used SQL to design the databases. My project helped a small clothing business grow their customer base by 200%.
System	Oh wow let's go over some database questions then. What does RDBMS stand for?
User	RDBMS stands for relational database management system.
System	What is the difference between a database management system and a relational database management system?
User	Well there are many differences but database management systems store data from files whereas relational database management system

Initial Sample Screens

Before creating our prototype for a specific portion of the experience, we designed sample screens for all three parts of the storyboard. Knowing what the whole picture (begining, middle, and end) would look like together allowed us to know how to start designing our prototype screens. These sample screens were created in Figma.





Evaluating the Experience

It was now time to design a prototype. Our team decided to prototype the interview portion of the experience since the goal of the app is to give users interview practice. We created a list of potential research questions and subquestions.

Potential Research Questions

1. How does the voice interview help the user gain knowledge about a real job interview?
    a) How do the questions tailored to the user's resume help the user?
    b) Does the presence of the timer affect how stressed or nervous the user feels?
2. How does the voice interview process make the user feel about upcoming interviews?
    a) Does the mock interview help to alleviate user's anxieties about talking with recruiters?
    b) Does the Dr. Bill successfully portray a knowledgeable recruiter to users?

We had to narrow down our research question to focus on aspects that were also possible to evaluate with the constaints of doing remote evaluations which made it more difficult to use the Wizard of Oz technique.

Final Research Question:

How does the voice interview help the user gain knowledge about a real job interview?

a) How do the questions tailored to the user's resume help the user?

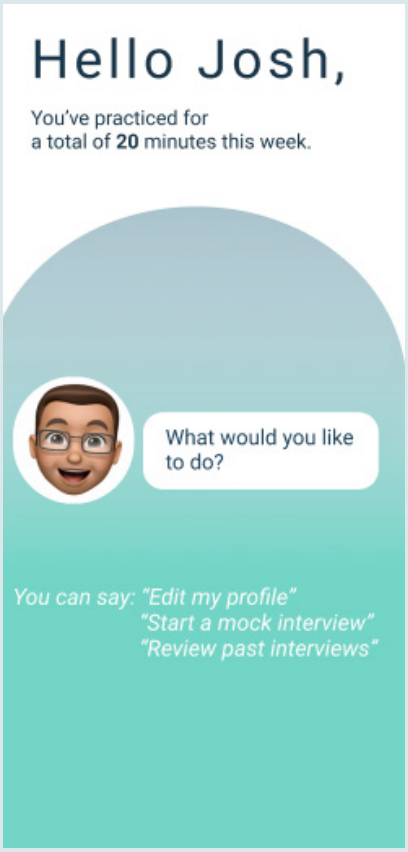
b) Does the presence of the timer affect how stressed or nervous the user feels?

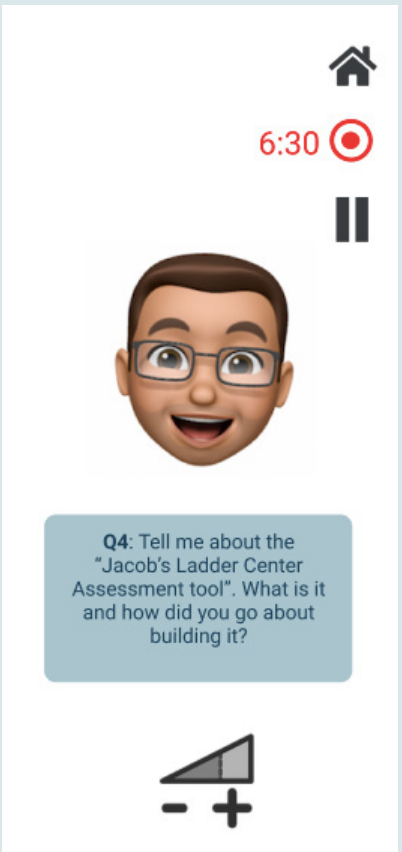
c) Does the Dr. Bill successfully portray a knowledgeable recruiter to users?

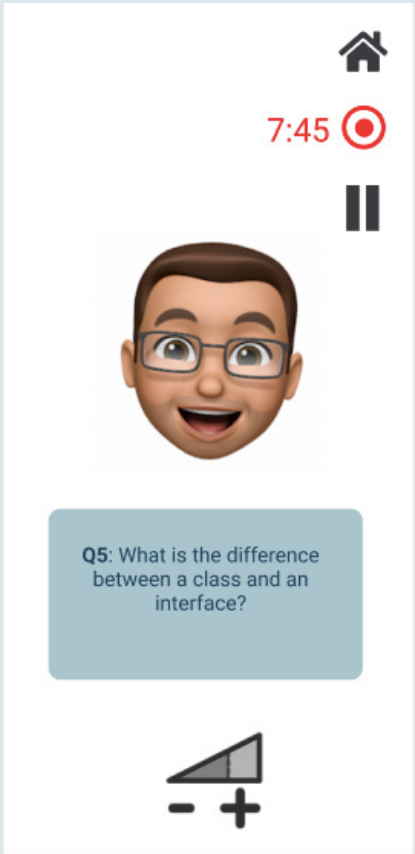
The Prototype

We chose to create our prototype in Figma. We had already made our sample screens in Figma. Figma also allows multiple users to access and edit documents simultaneously as well as has prototype features to create interactions between screens.

Because Dr. Bill requires advanced natural language processing capabilities to hold full length technical interviews, we used wizard of oz prototyping. During the heuristic evaluations, we used BlueJeans to share our screen with the evaluator. We created different hot corners on our prototype screens. Depending on what the user said, one of us (acting as the wizard) would control the flow of interaction.







Heuristic Evaluation

We adapted Nielsen's heuristics to fit our research question. Dr. Bill asks users questions based on their resume. This means that the application must be able to handle a large spectrum of user responses, so we included a heuristic for tolerating ambiguity. Dr. Bill should also closely replicate the expertise and sound of a recruiter; we created a heuristic for tone of voice. Lastly, we wanted to make sure that it was still easy for users to figure out what buttons and commands they could say during the interview to play, pause, or exit the interview. We ended up choosing ten heuristics that were given to the evaluators on the heuristic evaluation sheet with a place to leave comments, suggestions, and rate each heuristic on a severity scale.

We also provided evaluators with a short task list that would help them test and evaluate all of the features of the prototype.

Task List

1. Start a 10-minute mock interview.
2. Start an interview that consists of both behavioral and technical questions.
3. Confirm the statement you made above.
4. Start the interview and answer all the questions. (Keep in mind that you don't have to answer them for real).
5. Pause the interview during the first question, and resume the interview again.
6. On question 4, click on the Home button but return back to the interview.

Dr.Bill Heuristic Evaluation

Evaluator Name:

Device Used:

Task: Conducting a practice interview

Severity Scale

0 Not an issue

1 Aesthetic design flaw

2 Minor usability issue

3 Major usability issue

4 Catastrophic usability issue; must be fixed immediately

1. Visibility of system status

The system should always keep users informed about what is going on with appropriate feedback within reasonable time.

○ 0 ○ 1 ○ 2 ○ 3 ○ 4

Issue

Recommendation

2. Match between the system and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user.

○ 0 ○ 1 ○ 2 ○ 3 ○ 4

Issue

Recommendation

3. User control and freedom

Users often choose system functions by mistake and users should easily be able to leave an unwanted state.

○ 0 ○ 1 ○ 2 ○ 3 ○ 4

Issue

Recommendation

4. Tolerate ambiguity

The system should understand reasonable synonyms or paraphrased commands such as ”stop interview” vs. “end interview”.

○ 0 ○ 1 ○ 2 ○ 3 ○ 4

Issue

Recommendation

5. Error prevention

System present users with a confirmation option or displays users’ selection before they commit to the action.

○ 0 ○ 1 ○ 2 ○ 3 ○ 4

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6. Recognition rather than recall

The system minimizes the user's memory load by making objects, actions, and options visible

Issue

Recommendation

7. Tone of Voice

Dr. Bill's tone of voice is polite and appropriate for the situation. It simulates the tone of a real interviewer.

Issue

Recommendation

8. Discoverability

System voice commands are easy to discover. Button functionality is quickly identifiable.

Issue

Recommendation

9. Aesthetic and minimalist design

System displays information that is necesary and relevant for the user's current task. Buttons displayed enhance the interview.

Issue

Recommendation

10. Help and documentation

If the user needs help, information is easily accessible. It is concise and focused on the user's task.

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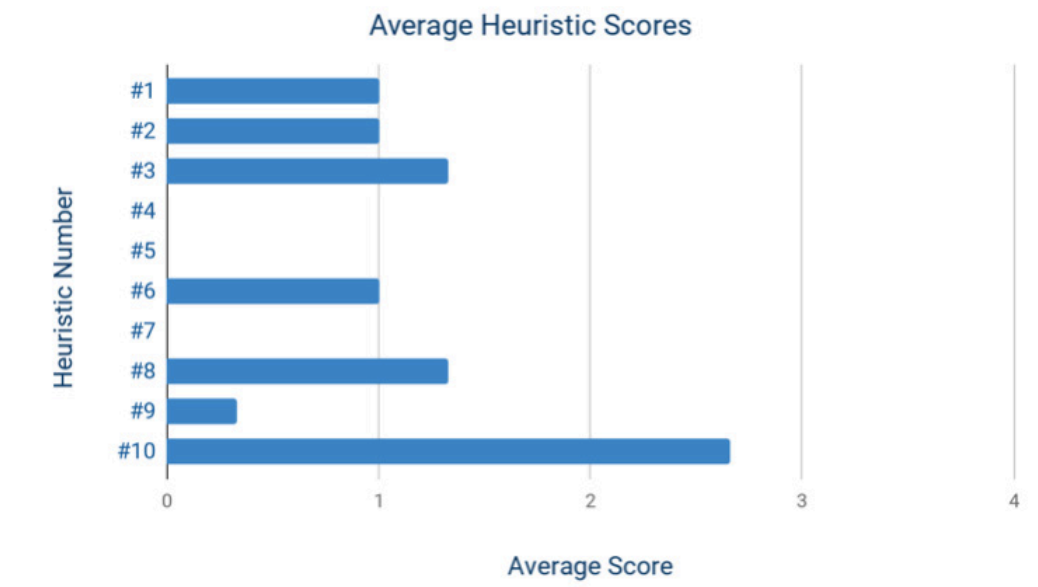
Heuristic Evaluation Data

All of the heuristic scores were compiled into the graph below and we used specific comments left by evaluators in order to select which issues we should focus on: help and documentation as well as user control and freedom. Because we were prototyping the middle of the experience and there was no onboarding process, evaluators were unsure of what commands they could say. All three evaluators expressed that it would be nice to have additional buttons to control the flow of interaction rather than relying solely on voice.

We also gained insight into what was working well in the prototype: Dr. Bill's tone of voice, tolerating ambiguity, error prevention, and the visual design of our app.



We used our data to answer our research questions.

How do the questions tailored to the user's resume help the user?

- Users were surprised and pleased to see questions that were specific to them
- One user noted how Bill's questions were similar to a previous actual interview

Do the image and tone of Dr. Bill successfully portray a knowledgeable recruiter to users?

- One user thought that Bill's word choice was a bit too stiff.
- Overall, users thought that Bill's voice tone was appropriate and fit well

Presenting the Experience

When it came time to present the overall experience, we went back to ideation and selecting ideas from the heuristic evaluation.

Main Areas of Improvement

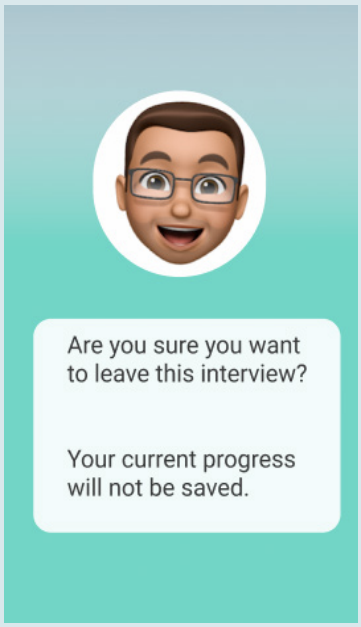
- Adding a help button with some sort of help documentation that tells the user what they can say. This would allow users to access a menu of commands during the interview to do things like change the duration of the inteview or end the interview early.
- Change some of Dr. Bill's wording to make him less robot-like. Dr. Bill should resemble a real recruiter as closely as possible in order to give users a true interview experience.

The screen size presented a constraint because a small phone screen can easily feel cluttered, so we limited the amount of visual elements we added. We chose to...

- Have some actions available as buttons instead of just voice commands
- Remove the timer and add a sleeker progress bar to show how far into the interview users are
- Remove the large volume control icon as users are more likely to use the buttons built into their phones

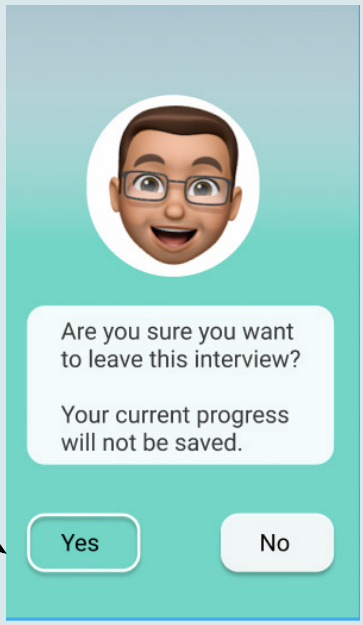
Improving the Prototype

Before



Added yes/no buttons so user's options are more clear

After



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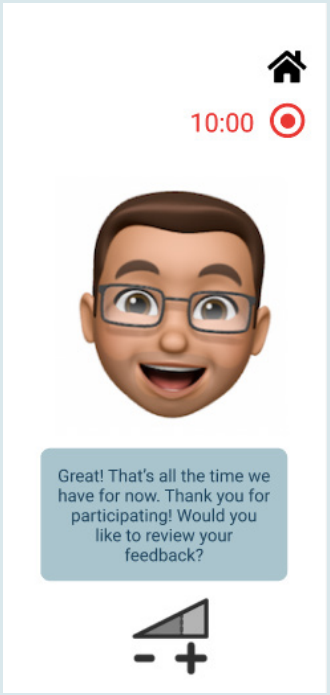
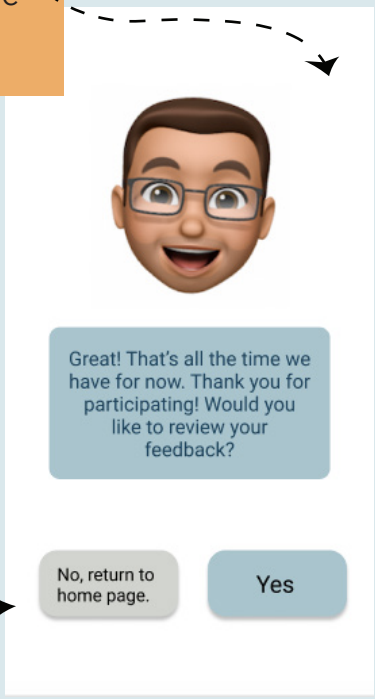


Removed the recording button

Removed the volume icon and added in button options to navigate through the app

After



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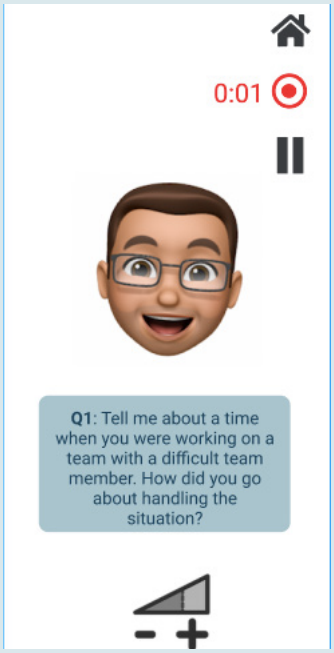
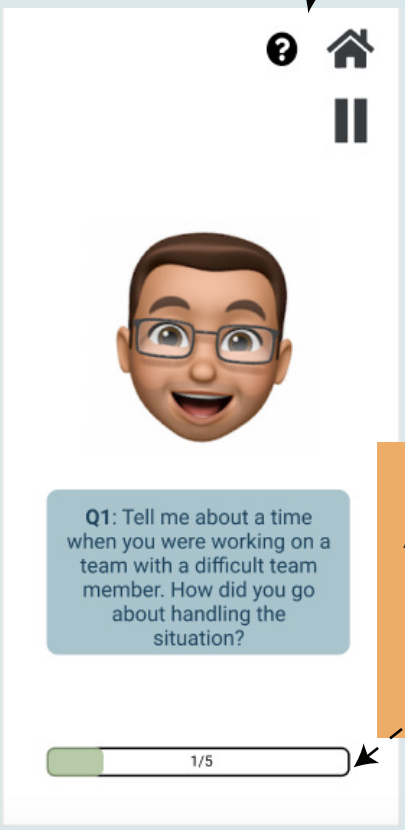


Made help and documentation clearly visible and accessible without a voice command

After



Added a progress bar which updates as the user progresses

After