



MINDMIRROR VR

Your Invisible Speech Coach in VR



Many speakers struggle to recall their lines during presentations, causing anxiety and disrupting flow. Traditional aids like flashcards or teleprompters are often distracting and break the **speaker's** connection with the audience.

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THE SUB-PROBLEM

We focused on solving the issue of speech recall during live delivery specifically, helping speakers remember their next lines without breaking eye contact or relying on visible, distracting aids like flashcards or screens.





TARGET USERS

Students


Educators

Corporate professionals

Public speakers

anyone who regularly presents and
wants to practice confidently in a
realistic, immersive environment

SOLUTION

An illustration of a person wearing a VR headset and holding a controller, standing on a stage and addressing an audience. The audience consists of three people seated in rows of chairs. The scene is set in a dimly lit room with warm, brown tones.

Mind Mirror VR, a virtual reality speech training tool that places users on a realistic stage with a visible audience. Using VR controllers, speakers can navigate floating AR-style text prompts, allowing them to recall their speech smoothly without relying on distracting notes or breaking their connection with the audience.



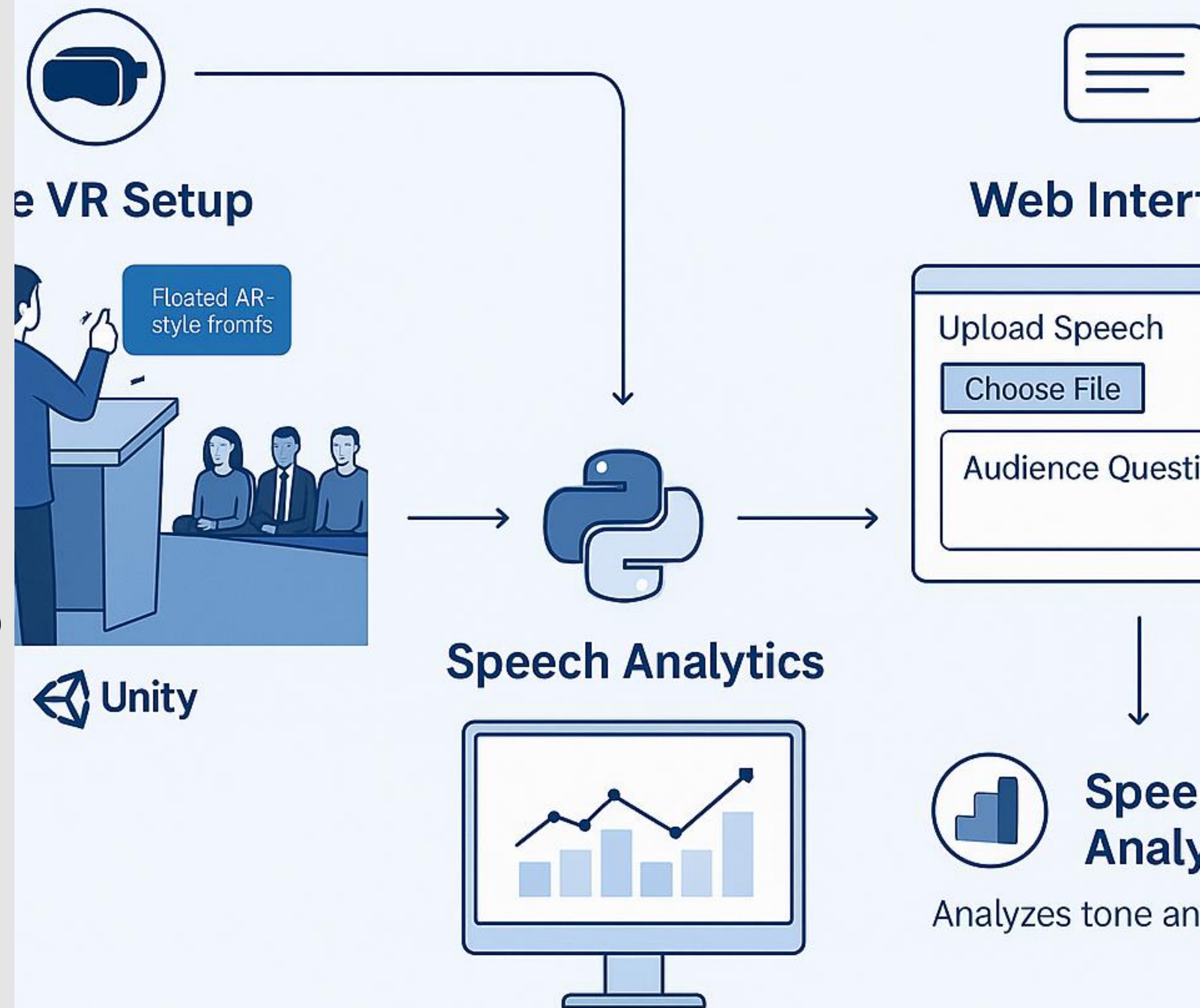
DESIGN OF THE SOLUTION

Mind Mirror VR places users on a realistic virtual stage with an animated audience, floating text prompts, and ambient effects like lighting and camera flashes. Using VR controllers, users navigate prompts while facing immersive challenges like distractions and time limits to simulate real-world speaking pressure.

IMPLEMENTATION OVERVIEW

We built Mind Mirror VR in Unity for deployment on Meta Quest.

On the backend, we created a web interface where users upload speeches and questions. We also integrated speech analytics to assess confidence and fluency levels.



File

Edit

Selection

View

Go

Run

Terminal

Help

mindmirror-server

EXPLORER

...

MINDMIRROR-SERVER

> .vscode

> node_modules

> Speech

> harvard.wav

> Prompt.txt

> PROMPTS.txt

> Speech (1).txt

> SPEECH.txt

> mindmirrorVRindex.ht...

> package-lock.json

> package.json

> prompts and speech

> server.js

> speech analysis.h... 1

speech analysis.html C:\...\Downloads 1

speech analysis.html .\ 1 X

mindmirrorVRindex.html

launch.json

speech analysis.html > html > head

2

<html lang="en">

3

<head>

4

<meta charset="UTF-8" />

5

<meta name="viewport" content="width=device-width, initial-scale=1.0"/>

6

<title>MindMirror VR Live Speech Analysis</title>

7

<link href="https://fonts.googleapis.com/css2?family=Orbitron:wght@600&family=Inter:wght@400;500&display=swap" rel="stylesheet"/>

8

<style>

9

:root {

10

--bg-primary: #0F172A;

11

--bg-secondary: #243B55;

12

--card-bg: rgba(15, 23, 42, 0.85);

13

--accent: #3ba1c7;

14

--text-main: #dce3ec;

15

--text-muted: #9bb6d6;

16

--button-primary: #3ba1c7;

17

--button-start: #4caf50;

18

--button-stop: #f44336;

19

}

20

* { box-sizing: border-box; }

21

body {

22

margin: 0; padding: 0;

23

background: linear-gradient(135deg, var(--bg-primary), var(--bg-secondary));

24

height: 100vh; display: flex; justify-content: center; align-items: center;

PROBLEMS 2

OUTPUT

TERMINAL

PORTS

DEBUG CONSOLE

Filter (e.g. text, lexclude, \escape)

Launch Chrome against

OUTLINE

TIMELINE

<

0

2

Launch Chrome against localhost (mindmirror-server)

Ln 3, Col 7

Spaces: 4

UTF-8

CRLF

HTML

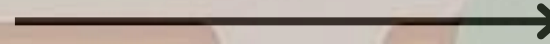
Port : 5500

CHALLENGES FACED

**Controller-Based
Prompt Navigation**

HOW WE ADDRESSED THEM

**XR Interaction Toolkit's
built-in input handling
with custom logic for
button press**



PILOT TESTING

Participants: 3 first-time users

Setup: Each participant used the VR app (Mind Mirror VR) to rehearse a short speech in the virtual stage environment

Observations:

All users completed the session and found the tool helpful where two users faced minor interaction issues with buttons and boundaries





USER FEEDBACK

| participant | First time usability | experience | challenges faced |
|-------------|----------------------|---------------------------------------|-------------------------------------|
| A | Difficult | Found it helpful overall | Struggled with button interactions |
| B | Easy | Very helpful and smooth first use | None |
| C | Moderate | Realistic atmosphere, liked obstacles | Button issues, boundary sensitivity |

TEAM CONTRIBUTIONS

Bhavya:

Led the VR environment setup, including stage design, audience modeling, lighting, and challenge creation (e.g., mic echo sound, questioning at the end, clapping). Handled all Unity implementation and scene logic, ensuring immersive user experience.

Shipra:

Developed the speech analytics and user input interface, allowing users to upload speeches and questions that integrate with Unity. Focused on backend connectivity and ensuring a smooth interaction pipeline between input and VR.



FUTURE WORKS

- Implement live speech processing by streaming audio to the cloud in real time
- Customizable Environments & Avatars
- Multilingual Prompt Support

