

Project Title

Since we are in the carbohydrate world...

Spaghetti-Screening.

Objective:

The problem being addressed is the inherent inefficiency and bias in traditional recruiting processes, which rely heavily on CV screenings as an initial filter.

This approach not only requires significant time and resources but is also prone to unconscious bias, as CVs can vary widely in structure and content, leading to inconsistent evaluations. Consequently, candidates may be unfairly advantaged or disadvantaged based on factors unrelated to job performance, such as name, educational background, or personal connections.

By shifting from CV-based assessments to skill and experience-based evaluations, the AI recruiting agent seeks to streamline the screening process, making it faster, fairer, and more consistent. This approach helps ensure that all candidates are judged on relevant criteria, promoting diversity and equity while increasing recruiting team productivity.

Approach

To build our AI-powered recruitment assistant, we combined advanced natural language processing, speech synthesis, and real-time communication tools for an efficient and user-friendly system that supports fair, skill-based candidate assessments.

At the heart of the conversational flow, we used two models from OpenAI: GPT-4o and GPT-4o-mini. GPT-4o generated context-specific interview questions based on job requirements, allowing us to assess candidates against clear, standardized criteria. For real-time interactions, GPT-4o-mini took over as a faster, latency-friendly model, making the conversation feel more natural by minimizing response delays.

For audio responses, we turned to ElevenLabs' Text-to-Speech (TTS) with the voice of Jessica, which adds a human touch to the interview. We pre-generated common questions and prompts with ElevenLabs' high-accuracy TTS model (eleven_multilingual_v2), while responses that needed to be generated in real time used a low-latency model (eleven_turbo_v2_5) to keep the interaction smooth and responsive.

To capture candidate responses accurately, AssemblyAI's Speech-to-Text (STT) translated spoken words to text, allowing seamless input into GPT-4o-mini for real-time replies. All transcripts and interview summaries were stored in Firebase's document-based database for easy access and reference, with audio files also saved in Firebase for later analysis.

On the front end, we used SvelteKit 5, which helped us build a reactive and dynamic web interface. SvelteKit's strengths in managing real-time data worked well with WebSocket connections, which we used to handle real-time data exchange between the browser and backend services, keeping the conversation smooth and responsive.

Overall, our approach blends accurate, human-like AI-driven conversation with fast response capabilities to create a practical, fair way to assess candidates, making recruitment both quicker and more consistent. All the different models were chosen because after research, they appeared to be the best on what they provide.

Results

One of the biggest perks of our AI-powered phone interview system is the comfortable, conversational experience it offers to candidates. Instead of dealing with the stress of crafting a polished CV, candidates can dive straight into a relaxed chat, which feels a lot more like a real conversation than a job application. This shift helps ease nerves, making the whole process feel more approachable and natural.

Plus, the AI interview lets candidates express themselves in their own words, capturing unique details about their experiences and skills that might not fit on a CV. It allows them to tell their story the way they want, emphasizing the parts they feel are most relevant for the job. This not only helps candidates feel more at ease but also gives recruiters a much more genuine, rounded view of each person. It's a win-win, creating a smoother, more human-centered hiring process that's fairer for everyone involved.

The AI interview system doesn't just benefit candidates—it also provides a major advantage for the recruiting team. By moving from CVs to structured, conversational assessments, the AI generates clear, organized summaries and insights after each interview. This means recruiters can quickly understand a candidate's key strengths, skills, and areas of experience without sifting through pages of CVs or long-form answers. Along with a full transcript of the conversation, the system provides a skill assessment based on the role's requirements, making it easier to see at a glance how well a candidate matches the job.

These insights streamline the hiring process, cutting down on the time recruiters spend screening and analyzing each applicant. Instead of manually assessing qualifications and parsing out skills, they can rely on a structured and objective report for each candidate. This not only speeds up decision-making but also adds consistency and clarity to the process, making it easier to compare candidates side by side and helping the team focus more on high-potential applicants. It's an efficient, data-driven approach that simplifies recruitment, so teams can spend less time on busywork and more time on finding the best fit for each role.

Challenges

Building an AI recruiter that could handle real-time interviews with candidates presented several challenges, from finding the right APIs and models to creating a smooth interaction flow between the AI, candidate, and recruiter. One of our initial difficulties was identifying the optimal models and APIs for each function—GPT-4o for creating job-specific questions, ElevenLabs for realistic voice synthesis, and AssemblyAI for real-time transcription. Finding APIs that could handle our requirements for speed and accuracy took testing, adjustment, and a good deal of trial and error, especially to balance responsiveness with natural-sounding interactions.

Another challenge was orchestrating the communication loop between candidate and AI interviewer. Each candidate response needed to be recorded, transcribed, processed by GPT-4o-mini in real time, then turned into a responsive audio answer—without noticeable delays or loss of context. Managing this loop required careful attention to latency, particularly when transforming candidate speech to text and text back to speech, while keeping the tone and flow conversational. We optimized the loop by pre-caching common responses and using low-latency models for real-time exchanges to keep the interaction smooth and engaging.

Handling data transformation between different models without sacrificing quality added another layer of complexity. Each API provided unique outputs that required adaptation before being passed to the next component. Managing the prompt context and transforming data objects without losing quality—whether for audio transcription, text interpretation, or response generation—was crucial. To overcome this, we created a series of custom prompt templates and transformation functions that ensured context and meaning were preserved across each step of the process, allowing us to maintain high-quality interactions from start to finish. Together, these

solutions made it possible to create a consistent, fluid experience that feels both natural and intuitive for candidates while delivering reliable insights for recruiters.

Job Questions

DATA ANALYST POSITION

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{
  "hardSkills": [
    {
      "questions": [
        "What tools and techniques do you use for data analysis?",
        "Can you describe a project where your data analysis had a significant impact on the outcome?",
        "How do you ensure the accuracy and reliability of your data analysis?"
      ],
      "skill": "Data analysis"
    },
    {
      "questions": [
        "How proficient are you in writing complex SQL queries?",
        "Can you provide an example of a challenging SQL problem you solved?",
        "What strategies do you use to optimize SQL queries for performance?"
      ],
      "skill": "SQL"
    },
    {
      "questions": [
        "What experience do you have with database management systems?",
        "How do you ensure data integrity and security in a database?",
        "Can you describe a time when you had to troubleshoot a database issue?"
      ],
      "skill": "Database management"
    },
    {
      "skill": "Data visualization",
      "questions": [
        "What tools do you prefer for data visualization and why?",
        "Can you provide an example of a data visualization project you worked on?",
        "How do you decide which type of visualization to use for different data sets?"
      ]
    },
    {
      "questions": [
        "What statistical methods are you most familiar with?",
        "Can you describe a project where statistical analysis was crucial to the outcome?",
        "How do you ensure the validity of your statistical analysis?"
      ],
      "skill": "Statistical analysis"
    },
    {
      "questions": [
        "How do you decide when to use R versus Python for a project?",
        "Can you describe a project where you used programming to automate a data analysis task?",
        "What libraries or frameworks do you frequently use in R or Python for data analysis?"
      ],
      "skill": "Programming (R, Python)"
    }
  ],
}
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{
  "skill": "Big data technologies",
  "questions": [
    "What experience do you have with big data technologies like Hadoop or Spark?",
    "Can you describe a project where you utilized big data technologies to solve a
problem?",
    "How do you handle the challenges of processing large datasets?"
  ]
},
{
  "skill": "Machine learning",
  "questions": [
    "What machine learning algorithms are you most familiar with?",
    "Can you describe a project where you implemented a machine learning model?",
    "How do you evaluate the performance of a machine learning model?"
  ]
},
{
  "questions": [
    "What cloud platforms have you worked with for data analysis?",
    "Can you describe a project where you used cloud services to manage data?",
    "How do you ensure data security and compliance when using cloud platforms?"
  ],
  "skill": "Cloud platforms"
}
],
"softSkills": [
  {
    "questions": [
      "Can you describe a time when you identified a problem and the steps you took to
solve it?",
      "How do you approach a complex problem that you have never encountered before?",
      "What methods do you use to evaluate the effectiveness of a solution?"
    ],
    "skill": "Problem-solving"
  },
  {
    "questions": [
      "How do you ensure that your analysis is objective and free from bias?",
      "Can you provide an example of a time when you had to make a decision based on
incomplete information?",
      "What strategies do you use to evaluate the credibility of data sources?"
    ],
    "skill": "Critical thinking"
  },
  {
    "skill": "Communication",
    "questions": [
      "How do you explain complex data findings to a non-technical audience?",
      "Can you give an example of a time when you had to persuade someone to see your
point of view using data?",
      "What tools or methods do you use to ensure clear and effective communication in your
reports?"
    ]
  },
  {
    "skill": "Collaboration",
    "questions": [
      "Describe a situation where you worked as part of a team to complete a project. What
was your role?",

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"How do you handle conflicts or disagreements within a team?",

"What strategies do you use to ensure effective collaboration with team members from different departments?"

]

}

]

}

NURSE JOB POSITION

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{
  "softSkills": [
    {
      "questions": [
        "Can you provide an example of a time when you showed compassion to a patient or their family?",
        "How do you ensure that you maintain compassion even in stressful situations?"
      ],
      "skill": "Compassion"
    },
    {
      "questions": [
        "Describe a situation where your communication skills made a difference in patient care.",
        "How do you adjust your communication style when interacting with different patients or team members?"
      ],
      "skill": "Strong communication"
    },
    {
      "questions": [
        "How do you build rapport with patients and their families?",
        "Can you describe a time when your interpersonal skills helped resolve a conflict in the workplace?"
      ],
      "skill": "Interpersonal skills"
    },
    {
      "skill": "Ability to work in a fast-paced environment",
      "questions": [
        "How do you prioritize tasks when working in a fast-paced environment?",
        "Can you give an example of how you managed a high-pressure situation effectively?"
      ]
    },
    {
      "questions": [
        "Describe a time when you had to manage multiple tasks at once. How did you ensure everything was completed efficiently?",
        "What strategies do you use to stay organized when handling multiple responsibilities?"
      ],
      "skill": "Ability to handle multiple tasks"
    }
  ],
  "hardSkills": [
    {
      "skill": "Bachelor's degree in Nursing (BSN)",
      "questions": [
        "What was the most valuable lesson you learned during your BSN program?",
        "How has your BSN education prepared you for the challenges of nursing?"
      ]
    },
    {
      "questions": [
        "Can you discuss the process you went through to obtain your RN license?",
        "How do you stay updated with the requirements to maintain your RN license?"
      ],
      "skill": "Current Registered Nurse (RN) license"
    }
  ]
}
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```
"skill": "Minimum of 2 years of clinical nursing experience",
"questions": [
  "What are some key experiences from your clinical nursing background that you bring
to this role?",
  "How has your clinical experience shaped your approach to patient care?"
]
},
{
  "skill": "BLS (Basic Life Support) certification",
  "questions": [
    "Can you describe a situation where your BLS training was crucial in patient care?",
    "How often do you refresh your BLS skills, and why is it important?"
  ]
},
{
  "skill": "Proficiency in electronic health record (EHR) systems",
  "questions": [
    "What EHR systems are you most familiar with, and how have you used them in your
previous roles?",
    "How do you ensure accuracy and efficiency when entering data into EHR systems?"
  ]
}
]
```

TRUCK DRIVER POSITION

```
{
  "softSkills": [
    {
      "skill": "Excellent time management",
      "questions": [
        "Can you describe a time when you had to manage multiple deliveries with tight deadlines? How did you ensure timely completion?",
        "How do you prioritize your tasks when you have several deliveries scheduled in one day?",
        "What strategies do you use to ensure you stay on schedule during long-haul trips?"
      ]
    },
    {
      "questions": [
        "How do you keep track of your delivery schedules and routes?",
        "Can you give an example of how you organized your day to maximize efficiency?",
        "What tools or methods do you use to organize your paperwork and delivery documentation?"
      ],
      "skill": "Organizational skills"
    },
    {
      "skill": "Strong communication",
      "questions": [
        "How do you handle communication with dispatchers and customers during a delivery?",
        "Can you provide an example of a time when effective communication helped resolve a problem on the road?",
        "How do you ensure clear communication when there is a language barrier with a customer?"
      ]
    },
    {
      "questions": [
        "Describe a situation where you went above and beyond to ensure customer satisfaction during a delivery.",
        "How do you handle difficult or dissatisfied customers?",
        "What steps do you take to ensure a positive experience for the customer at the point of delivery?"
      ],
      "skill": "Customer service abilities"
    },
    {
      "questions": [
        "Can you describe a time when you had to adapt to a sudden change in your delivery schedule?",
        "How do you handle unexpected road closures or detours during a delivery?",
        "What is your approach to managing last-minute changes or requests from customers?"
      ],
      "skill": "Flexibility"
    }
  ],
  "hardSkills": [
    {
      "questions": [
        "What endorsements do you currently hold on your CDL?",
        "How do you stay updated on changes in CDL regulations and requirements?",
        "Can you describe the process you went through to obtain your CDL?"
      ]
    }
  ]
}
```



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    ],
    "skill": "Valid Commercial Driver's License (CDL) with appropriate endorsements"
  },
  {
    "questions": [
      "Can you describe your experience as a truck driver over the past two years?",
      "What types of vehicles have you driven in your professional experience?",
      "How has your experience as a truck driver prepared you for this position?"
    ],
    "skill": "Minimum of 2 years of experience as a professional truck driver"
  },
  {
    "skill": "Clean driving record",
    "questions": [
      "How do you ensure you maintain a clean driving record?",
      "Have you ever had any traffic violations or accidents? If so, how did you handle
them?",
      "What steps do you take to ensure safe driving practices?"
    ]
  },
  {
    "questions": [
      "Have you ever had any issues passing a DOT physical examination or drug
screening?",
      "What do you do to maintain your health and fitness to meet DOT requirements?",
      "How do you prepare for a DOT physical examination?"
    ],
    "skill": "Ability to pass DOT physical examination and drug screenings"
  },
  {
    "skill": "Basic mechanical knowledge for routine vehicle maintenance",
    "questions": [
      "Can you describe a time when you performed routine maintenance on your vehicle?",
      "What basic mechanical tasks are you comfortable performing on your truck?",
      "How do you handle mechanical issues that arise during a delivery?"
    ]
  }
]
}

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