

Project 2: Search Accuracy Report

Overview:

As the lead analyst for the **Search Accuracy Report** project, I orchestrated a comprehensive analysis to enhance the efficiency and precision of our job marketplace platform's search functionality.

The primary goal was to elevate search accuracy metrics and understand the current user search experience and give suggestion to improve the Search accuracy rate

Key Responsibilities and Contributions:

Metric Definition:

- Defined a set of relevant metrics crucial for measuring search accuracy, including **Relevance Score, Click-Through Rate (CTR), Conversion Rate, Search Query Success Rate, Bounce Rate, Time to Apply, User Feedback, Error Rate, Long-Tail Searches, and Fail Case.**
- Carefully selected metrics that aligned closely with our goals and collaborated with data engineers to acquire any missing data required for analysis.

| # | Metrics | Explain | Note | Chosen metric |
|---|-----------------|--|---|---------------|
| 1 | Relevance Score | Calculate a relevance score for each search result based on the match between the search query and the job posting (e.g., keyword matching, location relevance). Weight the importance of different sections (job title, country, city) in the search query. | Complicated calculation with slow performance | |

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|---|--------------------------|---|---|---|
| 2 | Click-Through Rate (CTR) | <p>Measure how often users click on a search result. A high CTR indicates that the search results are aligning with user expectations.</p> | <ul style="list-style-type: none"> • CTR: $\text{Number of Clicks} / \text{Number of Impressions}$ • Precision = $(\text{Number of Relevant Clicks} / \text{Total Number of Clicks}) * 100$ <ul style="list-style-type: none"> ○ Precision measures the accuracy of the system in terms of providing relevant results. A high precision indicates that when a user clicks on a result, it's likely to be relevant to their needs. • Recall = $(\text{Number of Relevant Clicks} / \text{Total Number of Relevant Results}) * 100$ <ul style="list-style-type: none"> ○ Recall measures the system's ability to find all relevant instances. A high recall indicates that the system is effective at retrieving relevant results. ○ Precision and recall are often inversely related—improving one may lead to a decrease in the other. This is known as the precision-recall trade-off. • Dwell Time on Clicked Results • Query Modification Rate: Track how often users modify their search queries after clicking on a result. | <ul style="list-style-type: none"> • CTR Impression to Click • Dwell Time on Clicked Results • Query Modification Rate |
| 3 | Conversion Rate | <p>Track the percentage of users who, after searching, go on to apply for a job. This indicates not just finding a relevant job but also the job's appeal upon closer inspection.</p> | <ul style="list-style-type: none"> • Application Rate = $(\text{Number of Job Applications} / \text{Number of Searches}) * 100$ • Conversion Rate by Search Query = $(\text{Number of Job Applications} / \text{Number of Searches for a specific query}) * 100$ <ul style="list-style-type: none"> ○ Identify queries with high conversion rates | <ul style="list-style-type: none"> • Application Rate |

| | | | | |
|----|---------------------------|--|---|---|
| | | | to tailor your search algorithm for similar queries. | |
| 4 | Search Query Success Rate | Determine the percentage of searches that result in a successful match. It helps in understanding how often users find what they're looking for. | <ul style="list-style-type: none"> Search Query Success Rate = (Number of Successful Searches / Total Number of Searches) * 100 <ul style="list-style-type: none"> Need to identify what is a Successful Search. Might be view >= 5 job detail page | <ul style="list-style-type: none"> Search Query Success Rate |
| 5 | Bounce Rate | Check how many users leave the site after performing a search without interacting further. | <ul style="list-style-type: none"> Exit Rate = (Number of Exits after Search / Number of Searches) * 100 <ul style="list-style-type: none"> Exits after Search: Leave after search without any view job detail action. | <ul style="list-style-type: none"> Exit Rate |
| 6 | Time to Apply | Measure the average time it takes for a user to go from performing a search to applying for a job. | <ul style="list-style-type: none"> Time Spent on Job Listings Time to convert Search to apply job | <ul style="list-style-type: none"> Time Spent on Job Listings Time to convert Search to apply job |
| 7 | User Feedback | Collect user feedback on search results through surveys or feedback forms. Understand if users perceive the results as relevant and helpful. | Need survey | |
| 8 | Error Rate | Monitor the frequency of search errors or irrelevant results. | Complicated calculation with slow performance | |
| 9 | Long-Tail Searches | Analyze how well your system handles longer and more specific search queries. Ensure that the search algorithm can handle a wide range of queries effectively. | Filter out which kind of longtail query that user searches for. If users didn't search for something so complicated, can move on for now | |
| 10 | Fail case | In the first page, after viewing x jobs but didn't apply | | |

Data Gathering:

- Worked closely with the data engineering team to collect and process necessary data from the job marketplace platform, ensuring a comprehensive dataset for analysis.

Benchmark Analysis:

- Conducted a benchmark analysis against industry standards, utilizing appropriate statistical methods and tools.
- Examined historical data, conducted user surveys and feedback analyses, and benchmarked against competitors and data from different markets (e.g., ID).
- Applied a meticulous approach to identify areas of improvement based on benchmark analysis results.

Improvement Plan Development:

- Formulated a detailed plan to implement changes aimed at enhancing search accuracy, considering insights derived from the benchmark analysis.
- Collaborated with relevant teams to seamlessly integrate proposed improvements into the search algorithm.

Monitoring and Impact Assessment:

- Established a robust monitoring system to track search accuracy Key Performance Indicators (KPIs) on a monthly basis over the following year.
- Successfully achieved a 10% increase in overall search accuracy by consistently monitoring the impact of implemented changes.
- This project not only improved the precision of our search algorithm but also demonstrated the efficacy of a data-driven approach in optimizing platform performance.

Tracking file:

| | | | | | Q3-2023 W39 | |
|--------------|--|---------------------------|-----------------|-----------------|-----------------|--------------------|
| Dimension | Dimension Metrics | Source | % WoW Change | % QoQ Change | % YoY Change | 24 Sep - 30 Sep |
| ID | Job Search Performed to View Job Detail Page | | | | | |
| (Web Only) | # Unique Users Search Job | enxn19av | -1% | - | - | |
| | # Unique Users Search Job - CANDIDATE | r9d2qa1c | -1% | - | - | |
| | # Unique Users With Job Card Impression Event - CANDIDATE | /l9cciw23 | -2% | - | - | |
| | # Unique Users Click Job Card in Search | /l9cciw23 | -1% | - | - | |
| | # Unique Users View Job Detail Page | Formula | -1% | - | - | |
| | # Unique Users have >= 5 View Job Detail Page Event After Search | Formula | -2% | - | - | |
| | # Unique Users have >= 5 View Job Detail Page Event After Search - CANDIDATE | Formula | -1% | - | - | |
| | # Unique Users Search Job received 0 jobs | 5tcov03c | -14% | - | - | |
| | # Unique Users Search Job received <10 jobs | 5tcov03c | -8% | - | - | |
| | # Unique Users End session without View job detail page | Formula | -6% | - | - | |
| | # Unique Users End session without View job detail page - CANDIDATE | Formula | -4% | - | - | |
| | % Search to Job Card Impression | /l9cciw23 | 0% | - | - | |
| | % Search to Job Card Impression - CANDIDATE | Formula | 0% | - | - | |
| | % Job Card Impression to Searched Job Clickthrough | /l9cciw23 | 1% | - | - | |
| | % Search Job Clickthrough to View Job Detail Page | /l9cciw23 | 0% | - | - | |
| | % Search to View Job Detail Page | /l9cciw23 | 0% | - | - | |
| | % Search to View Job Detail Page - CANDIDATE | Formula | 0% | - | - | |
| Success Rate | % Users have >= 5 View Job Detail Page Event After Search | w8txexne | -1% | - | - | |
| Success Rate | % Users have >= 5 View Job Detail Page Event After Search - CANDIDATE | 9fsudkeg | 1% | - | - | |
| Fail rate | % Users Search Job received 0 jobs | Formula | -13% | - | - | |
| Fail rate | % Users Search Job received <10 jobs | Formula | -7% | - | - | |
| Exit rate | % Users End session without View job detail page | 2h7bkge1 | -5% | - | - | |
| Exit rate | % Users End session without View job detail page - CANDIDATE | 9lkrq5pw | -3% | - | - | |
| (Android Or | # Unique Users Search Job | enxn19av | 3% | - | - | |
| | # Unique Users With Job Card Impression Event | /l9cciw23 | 4% | - | - | |
| | # Unique Users Click Job Card in Search | /l9cciw23 | 4% | - | - | |
| | # Unique Users View Job Detail Page | Formula | 4% | - | - | |
| | # Unique Users have >= 5 View Job Detail Page Event After Search | Formula | 4% | - | - | |
| | # Unique Users Search Job received 0 jobs | 5tcov03c | 1% | - | - | |
| | # Unique Users Search Job received <10 jobs | 5tcov03c | 3% | - | - | |
| | # Unique Users End session without View job detail page | Formula | 7% | - | - | |
| | % Search to Job Card Impression | /l9cciw23 | 1% | - | - | |
| | % Job Card Impression to Searched Job Clickthrough | /l9cciw23 | 0% | - | - | |
| | % Search Job Clickthrough to View Job Detail Page | /l9cciw23 | 0% | - | - | |
| | % Search to View Job Detail Page | /l9cciw23 | 0% | - | - | |
| Success Rate | % Users have >= 5 View Job Detail Page Event After Search | w8txexne | 1% | - | - | |
| Fail rate | % Users Search Job received 0 jobs | Formula | -2% | - | - | |
| Fail rate | % Users Search Job received <10 jobs | Formula | 0% | - | - | |
| Exit rate | % Users End session without View job detail page | 2h7bkge1 | -9% | - | - | |

Q3-2023
W39

| Dimension | Dimension Metrics | Source | % WoW Change | % QoQ Change | % YoY Change | 24 Sep - 30 Sep |
|-----------|---|----------------------------|--------------|--------------|--------------|-----------------|
| Duration | VN Dwell Time from Job Search Performed | | | | | |
| | (Web Only) ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | -28% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | -7% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | -7% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | -2% | - | - | |
| | (Android Or ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | -2% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | -7% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | -6% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | 1% | - | - | |
| | (iOS Only) ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | -18% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | -5% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | -5% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | 1% | - | - | |
| | ID Dwell Time from Job Search Performed | | | | | |
| | (Web Only) ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | 23% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | 2% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | 3% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | 0% | - | - | |
| | (Android Or ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | 0% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | 2% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | 3% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | -2% | - | - | |
| | (iOS Only) ⌚ Job Search Performed to Job Card Impression | t/8tiytfwh | 5% | - | - | |
| | ⌚ Job Search Performed to Job Result Selected | 3w4sr924 | 5% | - | - | |
| | ⌚ Job Search Performed to View Job Detail Page | 1pto88dh | 5% | - | - | |
| | ⌚ Job Search Performed to Job Applied | 2ue0r8u4 | 0% | - | - | |