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AI RESUME ANALYZER

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Abstract—
The AI Resume Analyzer is an intelligent web-based application that automates the resume screening process using Natural Language Processing (NLP) and Machine Learning (ML). The system extracts relevant candidate information such as skills, education, and experience from resumes and compares it against job descriptions to generate a fit score. Designed with both recruiters and applicants in mind, it offers an interactive dashboard for seamless interaction. The goal is to reduce manual workload, increase objectivity in hiring, and make the recruitment process faster and more efficient.

Keywords:
Python, Streamlit, MySQL

I. INTRODUCTION

THE MAIN OBJECTIVE OF THIS TOOL IS TO ANALYZE APPLICANT'S RESUME USING RESUME PARSER TECHNIQUE AND SOME ALGORITHM. RECRUITMENT PROCESSES IN MODERN ORGANIZATIONS FACE THE CHALLENGE OF HANDLING LARGE VOLUMES OF RESUMES WHILE ENSURING FAIRNESS AND ACCURACY. MANUAL SCREENING IS NOT ONLY TIME-CONSUMING BUT OFTEN BIASED AND INCONSISTENT. THE INCREASING DEMAND FOR SMARTER HIRING SOLUTIONS HAS OPENED UP OPPORTUNITIES FOR AI-BASED AUTOMATION. THIS PROJECT AIMS TO DEVELOP A TOOL THAT LEVERAGES ARTIFICIAL INTELLIGENCE TO STREAMLINE RESUME SCREENING, REDUCE HUMAN BIAS, AND IMPROVE CANDIDATE-JOB MATCHING ACCURACY. BY AUTOMATING THE INITIAL FILTERING STAGE, RECRUITERS CAN FOCUS ON MORE STRATEGIC DECISION-MAKING.

II. LITERATURE REVIEW

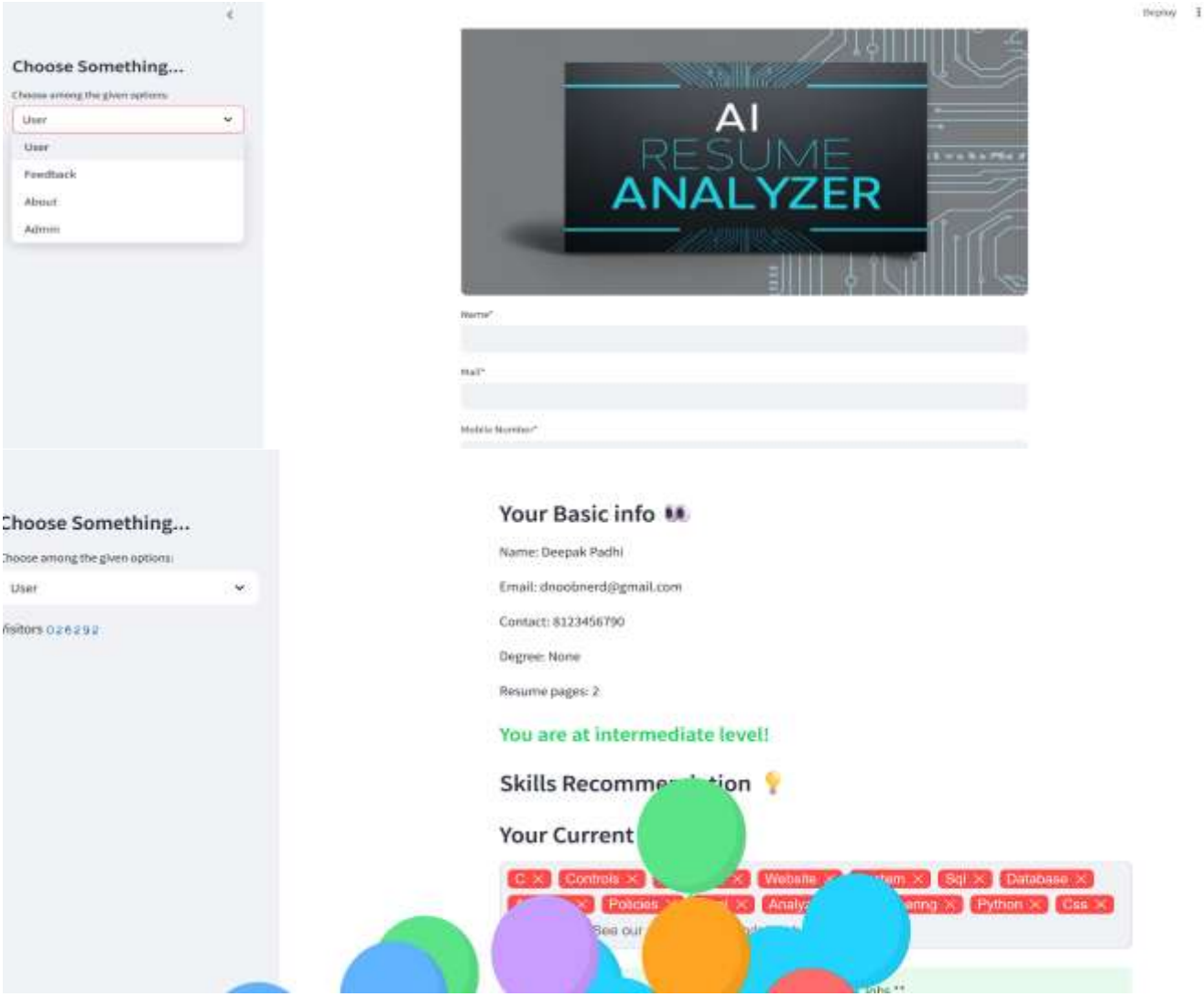
NUMEROUS STUDIES AND TOOLS HAVE ATTEMPTED TO SIMPLIFY RESUME PARSING AND CANDIDATE EVALUATION. EARLY SYSTEMS RELIED ON RULE-BASED EXTRACTION METHODS, WHILE MORE RECENT APPROACHES UTILIZE NLP AND ML FOR BETTER CONTEXTUAL UNDERSTANDING. COMMERCIAL SOLUTIONS LIKE HIREABILITY AND DAXTRA EXIST, BUT THEY OFTEN OPERATE AS BLACK BOXES, LIMITING CUSTOMIZATION. ACADEMIC RESEARCH HAS EXPLORED SIMILARITY SCORING BETWEEN RESUMES AND JOB DESCRIPTIONS USING MODELS SUCH AS TF-IDF AND BERT. DESPITE PROGRESS, ISSUES LIKE FORMAT INCONSISTENCY, BIAS, AND LACK OF TRANSPARENCY REMAIN. THIS PROJECT BUILDS UPON EXISTING WORK, AIMING TO PROVIDE AN OPEN, EXPLAINABLE, AND EFFICIENT SOLUTION.

III. SYSTEM DESIGN

A LAPTOP/DESKTOP
O CONNECTED WITH INTERNET AND HAS A BROWSER
O INSTALLED MYSQL
• SINGLE NETWORK CONNECTION
O SO THAT OTHER DEVICES CAN CONNECT THROUGH NETWORK URL
• A SIMPLE FORMAT RESUME TO TEST THE TOOL

IV. IMPLEMENTATION

THE SYSTEM IS IMPLEMENTED AS A FULL-STACK WEB APPLICATION. THE FRONTEND IS DEVELOPED USING STREAMLIT PROVIDING A RESPONSIVE AND USER-FRIENDLY INTERFACE. THE BACKEND IS BUILT WITH FLASK IN PYTHON, INTEGRATING NLP LIBRARIES LIKE SPACY AND NLTK FOR RESUME PARSING AND JOB MATCHING. FIREBASE IS USED FOR REAL-TIME DATABASE OPERATIONS, AND THE APPLICATION IS HOSTED ON PLATFORMS LIKE RENDER OR FIREBASE. THE WORKFLOW INVOLVES UPLOADING A RESUME, PARSING KEY FIELDS, MATCHING THEM WITH PREDEFINED JOB DESCRIPTIONS, AND GENERATING A SCORE ALONG WITH RECRUITER-READY FEEDBACK.



V. RESULTS

THE AI RESUME ANALYZER WAS TESTED USING MULTIPLE SAMPLE RESUMES AND JOB DESCRIPTIONS TO EVALUATE ACCURACY AND PERFORMANCE. THE SYSTEM SUCCESSFULLY EXTRACTED RELEVANT FIELDS FROM VARIED RESUME FORMATS

AND PROVIDED MEANINGFUL FIT SCORES BASED ON THE SKILL MATCH PERCENTAGE. RECRUITER DASHBOARDS DISPLAYED PARSED DATA WITH FILTERING AND DOWNLOADING OPTIONS. THE TOOL SIGNIFICANTLY REDUCED MANUAL SCREENING TIME WHILE MAINTAINING CONSISTENCY AND TRANSPARENCY. USER FEEDBACK INDICATED IMPROVED USABILITY AND THE POTENTIAL TO SCALE THIS SOLUTION FOR REAL-WORLD HR APPLICATIONS.

VI. **CONCLUSION**

A QUICK AND EASY TO USE RESUME ANALYZER O THAT ANALYSE RESUME DATA AND EXTRACT IT INTO MACHINE-READABLE OUTPUT O HELPS APPLICANTS WITH FEW RECOMMENDATIONS. IT ALSO HELPS AUTOMATICALLY STORE, ORGANIZE, AND ANALYSE RESUME DATA TO FIND THE BEST CANDIDATE.

VII. **ACKNOWLEDGEMENT**

WE EXTEND OUR SINCERE APPRECIATION TO ALL INDIVIDUALS AND ORGANIZATIONS WHOSE CONTRIBUTIONS HAVE BEEN INSTRUMENTAL IN THE DEVELOPMENT OF THE AI RESUME ANALYZER. WE WOULD LIKE TO EXPRESS OUR HEARTFELT GRATITUDE TO MY PROJECT GUIDE AND FACULTY MENTORS FOR THEIR CONSTANT SUPPORT, GUIDANCE, AND VALUABLE INSIGHTS THROUGHOUT THIS PROJECT. WE ARE ALSO THANKFUL TO MY PEERS FOR THEIR CONSTRUCTIVE FEEDBACK AND TO THE OPEN-SOURCE COMMUNITY FOR THE TOOLS AND LIBRARIES THAT MADE THIS PROJECT POSSIBLE. LASTLY, WE APPRECIATE THE OPPORTUNITY PROVIDED BY OUR INSTITUTION TO WORK ON A PROJECT THAT BRIDGES ACADEMICS AND REAL-WORLD CHALLENGES.

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