FEYNN LABS

PROJECT -3

ON

Prototype development and Business/ Financial Modelling for AI Based Resume Parser

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ABSTRACT-

Agencies and various firms must deal with many new jobs seeking people with various resumes. However, managing large amounts of text data and selecting the best-fit candidate is more difficult and time-consuming.

So, to come up with the solution for this problem we will presents a system that uses Natural Language Processing (NLP) techniques to extract minute data from a resume, such as education, experience, skills, and experience. The recruiting process is made easier and more efficient by parsing the resume. The proposed system is made up of three modules: an administration management system, File upload and parser system, and an information extraction system. The administrator will upload the applicant's resume into the system, and the relevant information will be extracted in a structured format. Using the parsed information from the Resume, HR can select the best candidate for the job based on the company's needs.

To smoothen the business productivity and maximizing the profit, it is quite essential to implement the automated process to manage and reduce the turnaround time. So, to send right candidate at right company which will increase the conversion ratio and make any venture profitable.

PROBLEM STAGTEMENT-

People with diverse personalities come from a variety of fields and backgrounds. In the same way, their resume writing style varies. They have worked on a variety of projects, and each of them has unique writing style. As a result, each resume is unique.

The executives/employees at Human Resource department spends approximately 15-20 minutes on each resume of the hundreds of entries and choose specific details and note it, summarize it and enter in their database, wasting a lot of time. And its high possibility that important relevant information regarding the candidate might miss out due to Human error. So, to eliminate these all scenarios this Automated resume parser can play a vital role.

PROTOTYPE SELECTION-

We chose the prototype idea of AI based Resume Parser which would utilize artificial intelligence and natural language processing capabilities to summarize the resume and to give it a score based upon how close it matches with desired skills and details, It will also give recommendation on what place the resume scores get lost (example formatting, spacing, grammar etc).And will also give the detailed key-points of a resume.

Let us examine how our idea meets various criteria:

1).Feasibility-

AI-based resume parsers can be customized to match specific requirements and job descriptions. This allows organizations to tailor the parser to their unique needs, ensuring that the extracted information aligns with the desired criteria and job qualifications.

To determine the feasibility of an AI-based resume parser prototype, consider the following points:

1. Technical Feasibility: We will find whether , Is it able to accurately extract information from resumes? Does it handle different resume formats and languages effectively? We have then Conducted thorough testing and evaluation to ensure the prototype meets the required performance standards.
2. Resource Requirements: Evaluate the resources needed for deploying and maintaining the AI-based resume parser. This includes computing power, storage, data annotation, and ongoing maintenance and updates. Ensure that you have access to the necessary resources to support the implementation.

2).Viability-

Determining the viability of an AI-based resume parser prototype involves assessing its market potential and competitiveness:

1. Market Demand: We have Analysed the market demand for resume parsing solutions. Researched the recruitment industry, HR technology trends, and the adoption of AI in recruitment processes. Identified potential target markets and understand their needs and main points to assess the viability of our prototype.
2. Competitive Landscape: We have Investigated existing players in the resume parsing market. Evaluated their features, pricing models, and customer base. Differentiated our prototype by offering unique functionalities, improved accuracy, and enhanced user experience.

3).Monetization-

To monetize an AI-based resume parser prototype, consider the following monetization strategies:

1. Software Licensing: We will Offer the resume parser as a software solution with different licensing models, such as one-time purchase, subscription-based, or tiered pricing based on usage or features. Consider targeting individual users, small businesses, or enterprise clients.
2. API Access: We can Provide an Application Programming Interface (API) that allows other software systems, such as applicant tracking systems or HR software, to integrate with your resume parser. Offer API access through a usage-based pricing model.
3. White Labelling: We can also consider partnering with HR software providers or recruitment agencies to white-label your resume parser, allowing them to offer it as a branded solution to their customers. This can be a licensing or revenue-sharing arrangement.
4. Data Analytics and Insights: Explore the possibility of offering value-added services, such as data analytics and insights derived from parsed resumes. This can help organizations gain deeper insights into candidate profiles and make more informed recruitment decisions.
5. Customization and Consulting: We can also provide customization services to adapt the resume parser to specific client requirements. Offer consulting services to guide organizations in optimizing their recruitment processes using AI-based resume parsing.

PROTOTYPE DEVELOPMENT-

DATASET- For this dataset we have took various resumes from random sources and tried to examine them based on our requirements. The dataset used for an AI-based resume parser project typically consists of a large collection of resumes or CVs. We have obtained from various sources, such as job portals, recruitment agencies, or publicly available dataset.

We have used NLP here because it can handle massive volumes of data in seconds or minutes that would take days or weeks to analyse manually. NLP technologies can instantly scale up or down to match demand, allowing us to have as much or as little

processing capacity as per requirement. Aside from that, humans are prone to errors or may have personal biases that might distort the findings while conducting repeated jobs like examining resumes one by one and other textual data. In this case, NLP-powered solutions can be taught to understand company's need and requirements in only a few steps. So, once they're up and going, they perform better in terms of accuracy.

The initial stage is generally text wrangling and pre-processing on the collection of documents. Then there's parsing and some basic exploratory data analysis. The next stage is to represent text using word embeddings and then do feature engineering. Following that, we must select a model based on whether we are dealing with a supervised or unsupervised learning scenario. The final step of any ML workflow is model testing and deployment. The early processes of text pre-processing and EDA are covered.

Then we have created a web Application based on our knowledge of development that helps us by summarizing the given resume and display its key skill-set required. It also gives the score on how close does the resume is to the set/desired work/role.

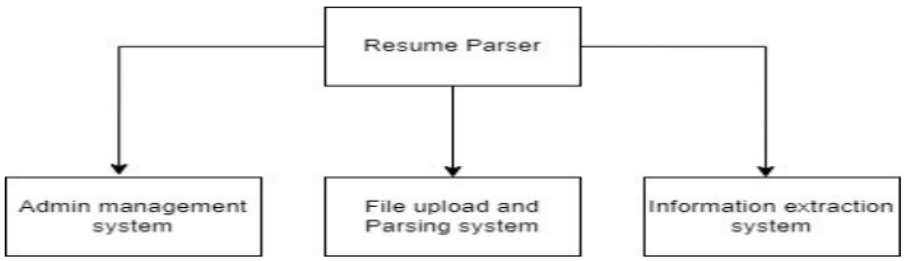
Reason behind Selection

The major reason for selection of this method is:

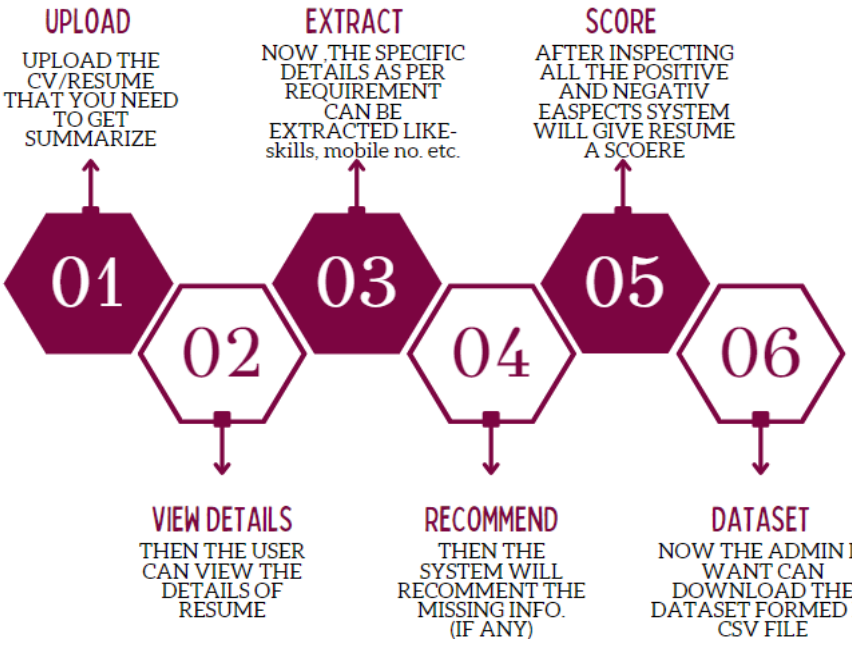
It is a transparent approach to project management.

The tasks and the progress of each task are constantly visible during the sprint. It is easy to learn and use. It even reduces time taken to get product to market

So now below is the Block Diagram representing how this application works for the user and what all features can be extracted from the resume.

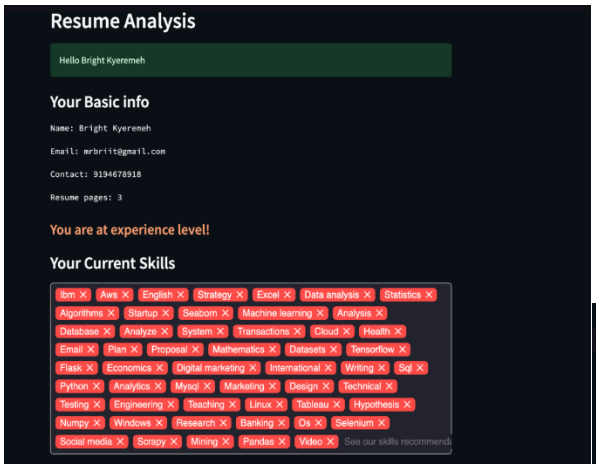


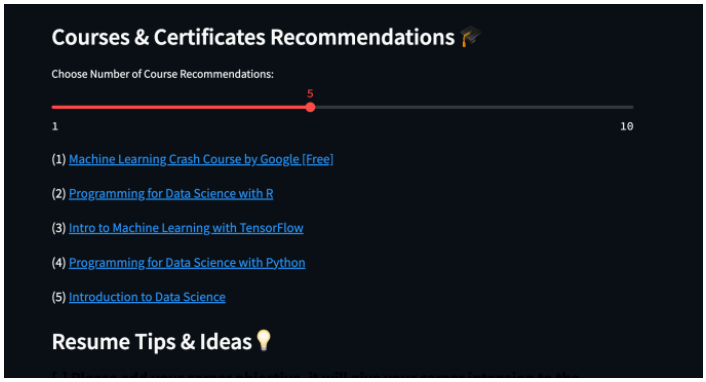
STEPS:-



This is how the resume will be processed by the system.

Following are glimpse of UI for the web application. There is room for improvement for the final product where we can add current status , notification message of score on given mail ids and mobile number etc.





If you want this application to work on your personal system you can install below libraries for making the set up: -

#pip install -r requirements.txt

pip install nltk

pip install spacy==2.3.5

pip install https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-2.3.1/en_core_web_sm-2.3.1.tar.gz

pip install pyresparser

This complete Protype of Web application is on this git link-

https://github.com/singhjagjeet101/Resume_parser

Other links of where we implemented the code-

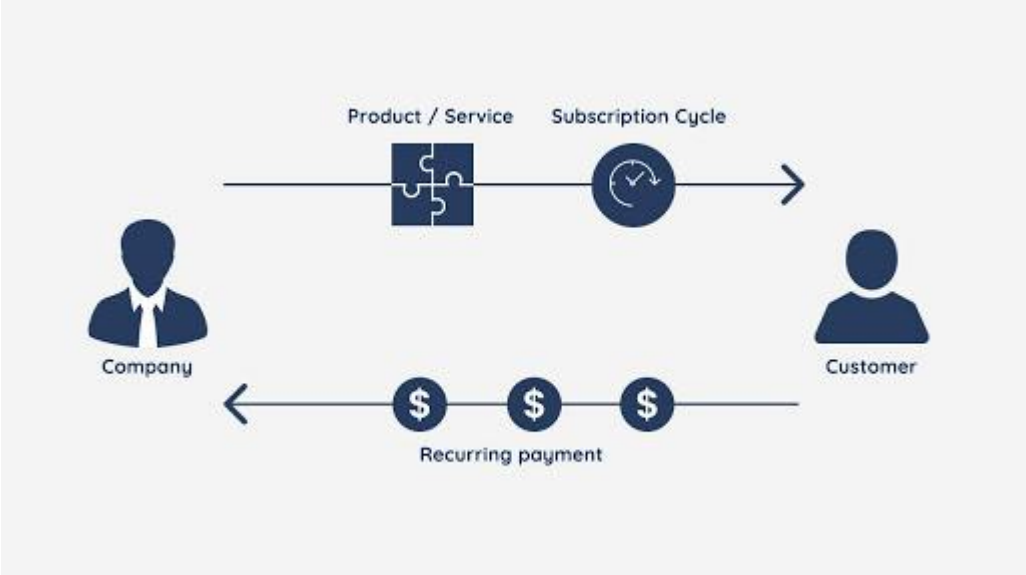
https://github.com/Gunjanadhakad/resumeExtract

https://github.com/naimat04/feynn_lab/tree/main/Project%203%3A%20Resume%20Parser

BUISNESS MODELLING-

When considering the business modelling of an AI-based resume parser web application, several key aspects should be considered. Here is a framework for business modelling that can be adapted and refined based on our specific goals and target market:

1. Value Proposition:
    - Identify the unique value that our AI-based resume parser web application offers to customers. This could include features like accurate resume parsing, time-saving automation, improved candidate screening, or customized parsing for specific industries or job roles.
2. Target Market:
    - Define our target market segment. Determine if we can cater to individuals (job seekers), small and medium-sized businesses, large enterprises, or recruitment agencies. Understand their pain points, needs, and preferences related to resume parsing and recruitment processes.
3. Revenue Streams:
    - Determine how we will generate revenue from your web application. Consider the following revenue streams:
        - Subscription Model: Offer different subscription plans based on usage, features, or support levels.
        - Pay-per-use: Charge customers based on the number of resumes parsed or API calls made.
        - Licensing: Provide a one-time licensing fee for organizations to deploy the application on their own servers.
        - White Labeling: Allow other companies to rebrand and resell your application under their own brand.
        - Value-added Services: Offer additional services like data analytics, insights, or customization for an extra fee.



4. Pricing Strategy:
    - Develop a pricing strategy that aligns with our target market and revenue streams. Consider factors such as market competition, the value provided by your application, and customer willingness to pay. Conduct market research and competitor analysis to determine appropriate pricing tiers and models.
5. Customer Acquisition:
    - Define our customer acquisition strategy. Identify channels to reach our target market, such as digital marketing, content marketing, social media, partnerships with recruitment platforms, or direct sales. Consider offering free trials or demos to showcase the capabilities of your resume parser and attract potential customers.
6. Key Partnerships:
    - Explore potential partnerships with complementary platforms or services that can integrate with our resume parser web application. For example, partnering with applicant tracking system (ATS) providers or job portals can help expand your reach and integrate seamlessly into existing recruitment workflows.
7. Marketing and Promotion:
    - Develop a marketing and promotion plan to create awareness and generate leads. Utilize online marketing channels, content marketing, social media advertising, search engine optimization (SEO), and targeted campaigns to reach your target audience. Highlight the unique features and benefits of your AI-based resume parser to differentiate it from competitors.

8. Customer Support and Maintenance:
    - Define the customer support strategy to ensure client satisfaction. Provide documentation, tutorials, and responsive support channels. Regularly update and maintain the web application to address bugs, security vulnerabilities, and feature enhancements.
9. Scalability and Growth:
    - Consider the scalability of business model. Determine how we can handle increasing demand, scale infrastructure, and support a growing customer base. Plan for future enhancements, additional features, and expanding into new markets or industries.

It's important to iterate and refine our business model as we gather feedback, understand customer needs, and adapt to market dynamics. We can regularly assess the business metrics, customer feedback, and competitive landscape to ensure the success and growth of the AI-based resume parser web application.

FINANCIAL MODELLING-

Financial modelling for this AI-based resume parser web application involves projecting the revenue, costs, and profitability of your business. Here are key components to consider when building the financial model:

1. Revenue Projection:
    - Determining the pricing strategy for our web application (e.g., subscription, pay-per-use, licensing). Estimate the number of customers and the average revenue per customer based on market research and your pricing model.
    - Project the monthly or annual revenue by multiplying the estimated customer base by the average revenue per customer.
    - Consider potential growth rates and the adoption rate of your web application to forecast revenue growth over time.
2. Cost Structure:
    - Identify the various costs associated with developing, maintaining, and operating your web application. This includes development costs, hosting and infrastructure expenses, employee salaries, marketing costs, customer support, and overhead expenses.

- Estimate these costs on a monthly or annual basis, considering both fixed costs (e.g., infrastructure) and variable costs (e.g., employee salaries, marketing expenses).

3. Profitability Analysis:
    - Calculate the gross profit by subtracting the cost of goods sold (e.g., hosting costs, infrastructure expenses) from the revenue. This provides a measure of the direct profitability of our web application.
    - Calculate the net profit by deducting all operating expenses (e.g., salaries, marketing, overhead) from the gross profit. This reflects the overall profitability of our business.
    - Monitor the gross margin and net profit margin to assess the financial health and efficiency of our business. Aim for margins that are in line with industry standards and reflect a sustainable and profitable business model.
4. Cash Flow Projection:
    - Forecast the cash flow by considering the timing of revenue inflows and expense outflows. Account for potential delays in customer payments and the timing of recurring revenue streams.
    - Determining our cash burn rate (if applicable) and assess your cash runway, which indicates how long your business can operate with the available cash reserves.
    - Monitor the cash flow projections to ensure that we have sufficient liquidity to cover expenses, invest in growth, and sustain operations.
5. Sensitivity Analysis:
    - Perform sensitivity analysis to understand the impact of key assumptions in our financial model. Assess the sensitivity of revenue, costs, and profitability to changes in variables such as pricing, customer acquisition rate, customer churn rate, or market conditions.
    - Identify the critical variables that have the most significant impact in our financial performance and consider risk mitigation strategies to address potential uncertainties.
6. Funding and Investment:
    - In case, if we require funding or investment, develop a plan to present your financial model to potential investors or lenders. Prepare a comprehensive business plan, highlighting the market opportunity, competitive advantage, revenue projections, and financial performance.

7. Regular Review and Iteration:
    - Continuously review and update our financial model as we have gathered real-world data, received customer feedback, and adapt your business strategy. Regularly track our actual financial performance against projected figures and refine our assumptions and forecasts accordingly.

Financial modelling is a dynamic process, and it requires periodic review and adjustment as your business evolves and market conditions change. It is crucial to monitor key financial metrics, analyse performance, and adapt our strategy to ensure the long-term financial viability and success of your AI-based resume parser web application.

Linear equations can be used in many ways in a business model. One common application is in forecasting sales or demand for a product or service.

In a simple linear equation, the relationship between two variables, such as sales and time, can be expressed as:

$y = mx + b$

Where "y" represents the dependent variable (sales), "x" represents the independent variable(time), "m" represents the slope or rate of change, and "b" represents the y-intercept (the value of y when x is zero).

Once the equation has been established, the company can use it to predict its sales for the upcoming quarter based on the time variable. This can be useful for planning purposes, such as determining how much inventory to order or how many employees to hire.

Another application of linear equations in business is in cost analysis. A company might use linear equations to determine the fixed and variable costs of producing a product, which can help in setting prices and determining profitability.

Price/Subscription of model (monthly)- 10000/-

Total Sales x(t)

Total Production and Marketing- 20000/-

Y=mx-c ---- financial modelling equation

Y= 10000*x(t) – 20000

Suppose 20 companies have taken the subscription of our resume parser model

So net profit- 10000*20-20000=180000/-

Resume parser AI applications can be used in various markets and industries where recruitment and candidate screening processes are prevalent. Here are some key markets where resume parser AI applications can be beneficial:

1. Recruitment Agencies: Resume parsing can streamline the candidate screening process for recruitment agencies. They can efficiently extract and analyse relevant information from resumes, enabling recruiters to quickly identify qualified candidates and match them with suitable job openings.
2. Human Resources (HR) Departments: HR departments in companies of all sizes can leverage resume parsing to automate and expedite the resume screening process. It helps HR professionals save time and effort by extracting and organizing candidate information, facilitating efficient candidate shortlisting and evaluation.
3. Job Boards and Career Websites: Resume parser AI applications can enhance the functionality of job boards and career websites. By automatically parsing and extracting information from uploaded resumes, they enable job seekers to create profiles easily and apply for positions with pre-populated data.
4. Applicant Tracking Systems (ATS): Integration with ATS platforms is a significant market for resume parser AI applications. ATS systems can leverage resume parsing technology to extract relevant details from resumes and populate candidate profiles seamlessly, facilitating effective applicant tracking and management.
5. Education and Academic Institutions: Resume parsing can be useful in educational institutions for automating processes such as student admissions, scholarship evaluations, and faculty recruitment. It enables efficient extraction and analysis of student or applicant information, facilitating faster decision-making.
6. Government Agencies: Government departments and agencies often handle a large volume of job applications. Resume parsing can help automate and streamline the evaluation of candidates for government positions, ensuring fair and efficient recruitment processes.
7. Job Placement Services: Job placement services or career counselling centres can benefit from resume parsing technology. It enables them to analyse candidate profiles, match them with suitable job opportunities, and provide personalized career guidance.
8. Freelance Platforms: Freelance marketplaces and platforms can leverage resume parsing to automate profile creation for freelancers. It simplifies the onboarding

process by extracting key details from resumes and populating freelancer profiles with relevant information.

9. Industry-specific Recruitment: Resume parsing AI applications can cater to specific industries such as healthcare, technology, finance, or engineering. By understanding industry-specific keywords and qualifications, the parser can extract relevant information tailored to those sectors.

These are just a few examples, and resume parser AI applications can be applied in various other markets and industries that involve candidate screening and recruitment processes. The key is to identify markets where the automation and efficiency offered by resume parsing can bring significant value and streamline existing workflows.