



HIRECTIVE

Video Resume App with Interactive and Targeted Hiring Platform

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CERTIFICATE

It is certified that the contents and form of thesis entitled “Video Resume App with Interactive and targeted hiring Platform” submitted by **Asim Mushtaq (2009-NUST-BIT-247)**, **Samran Zulfiqar (2009-NUST-BIT-312)** have been found satisfactory for the requirement of the degree.

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DEDICATION

To Allah the Almighty

&

To our Parents and Faculty

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LIST OF ABBREVIATIONS

App	Application
Ads	Advertisements
API	Application Programming Interface
CV	Curriculum Vitae
ERD	Entity Relationship Diagram
HR/hr.	Human Resource
iOS	iPhone Operating System
UI	User Interface



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ABSTRACT

There are thousands of jobs postings every day and long and hectic shortlisting processes make current forms of hiring very non-interactive. With lack of proper job lead management and intelligent systems to generate standard resumes of different regional/job specific formats, no compatibility check, no standards and inefficient search, finding the suitable candidate for employers and desired job for employees becomes really difficult. Hirective at this stage aims to provide a solution to this HR industry problem.

Hirective gives you a propriety resume format for CV's having textual and image data with candidate's intro video as a video resume feature which is viewable online, readable by our mobile app and our own desktop resume reader.

The simple UI Design facilitates the interaction of employers and job-seekers enabling them to land a job/find a candidate with one standard video-resume, compatibility testing and skill testing phase with minimum hassle and wastage of time! System will allow employees to view jobs posted by subscribed employers, set a job search framework for newsfeed, generate intelligent resumes, search relevant jobs through enhanced tag search and apply for the jobs from the application by sharing standard resume after compatibility testing. The employer interface will provide them increased control and precise search results with compatibility testing feature, candidate search framework, posting jobs and interview/skill test questions, viewing relevant applications and results, and tag search.

The targeted hiring platform will serve the purpose of finding the most relevant candidate for employers and finding the best suited job for job seekers. The concept of generating on demand views for CV, skill testing (optional module), rating and discussion panel, live chat and interview questions and the video resume itself all make our intelligent system interactive to use thus making hiring easy and interesting for everyone.

INTRODCUTION

1.1 PROBLEM STATEMENT

With increase in complexity, competition and size of HR processes to recruit people for different job postings, potential employers have to do a long and tiring search through the applicants traditional resumes to shortlist the best candidates for different job postings. Online job portals and CV builder web sites are available in the market trying to bridge the gap between the employers and employees and making the hiring process easier for both parties but one thing which most of these current forms lack in, is lack of interaction between the two participants and proper job lead management.

For job seeker making resumes for different domains, for different type of employers and on country standard specific domains is another challenge which becomes a hectic job for them at the time of application and there is no efficient intelligent system which can automate this task for them. There is a need for a standard format to integrate old textual resumes with new concept of Video to make them more interactive and let employers know their candidates to narrow their search or choose candidates for selection. For recruiters, all information might not be relevant and they might like to go through only on specific column for final selected candidates, which is a challenge for them as again they have to go through that column of each candidate separately. Moreover ease in the search and selection of best candidates for employers and of potential and relevant jobs for the employees are other challenges. Candidates don't want to fill long applications before knowing that they are eligible for the job or not, and employers don't want to scan through resumes of candidates which do not meet the minimum requirements, so there is a need for compatibility testing before employees could apply for the position and employers could view the applications of job seeker who apply.

1.2 PROJECT GOALS AND CHALLENGES

The Project is aimed at addressing the problems mentioned above by developing an innovative and simple solution using the technology expertise and then getting the employers and employees to use the software solution at a large scale. The challenge is to learn new technology of JSF, develop the product, make it useable and used in a way that the solution is stable, scalable and user friendly and the final product is properly marketed and launched as a successful product.

Project had the objective to develop an intelligent system for matching best job seeker with the job posted, a system to generate and handle our proprietary video resume file format, a desktop software to read the new file format, a mobile application for employer and employee to manage and view their accounts; search post and apply for jobs, functionality to generate specific standard intelligent resumes and provide a business model of charging employers for job postings, shortlisting candidates and advertisements.

1.3 PROJECT DOMAINS

The project is categorized into two broader domains of Business and Technical domains.

1.3.1 Business Domain

1.3.1.1 Human resource

HR nowadays is one of the most important departments in almost 90 % of the firms which is present to recruit, train and manage the human resources for an organization and companies' success is very much dependent on this resource. The HR departments faces a lot of hassle and spends a lot of time in getting applicants for jobs, viewing their profiles and evaluating them for final selection. We plan to target this problem of HR domain and provide an innovative solution to make things easier for them.

1.3.1.2 Online advertisements

Advertisement industry come under marketing domain at large and forms a major proportion of revenue generation sources for many social networks and websites. We plan to work in this domain to advertise jobs and related advertisements for our business model and generate revenue from the project.

1.3.2 Technical Domain:

1.3.2.1 Information management

According to *Wikipedia* ; “Information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences”. In our case we will be managing textual plus multimedia information of job seeking candidates, and providing an interactive platform to distribute that information in a propriety standard way to employers, who can then further manage and use that information for their purpose of selecting candidates.

1.3.2.2 Web application development

Web development involves designing and developing a web site for the Internet (World Wide Web) or an intranet and may include web design, content development, client connection, client and server-side scripting, web and application server and network security configuration, and e-commerce development. Our interactive web portal will encompass around almost all the features mentioned above and is aimed at keeping everything simple and attractive.

1.3.2.3 Mobile application development

Mobile Application Development refers to development of applications for different mobile devices platforms specific to different operating systems using their provided SDKs and development environments e.g. Xcode used for developing applications for iOS for iPhone, iPad, Eclipse used for developing applications for android for android powered phones, tablets, Visual Studio 2012 used for developing windows 8 OS for windows powered phones. We will be

working on iOS initially for our application as it has the biggest App Store with premium customers and developers famous worldwide. The software is stable and user friendly in all aspects of development and usability.

1.3.2.4 New file format development

According to *Wikipedia* “A file format is a standard way that information is encoded for storage in a computer file. A file format specifies how bits are used to encode information in a digital storage medium. File formats may be either proprietary or free and may be either unpublished or open.”

For the part of our project, we intend to develop a propriety format for CVs which will be first of its kind to include textual, image and video data in one single file with a new extension only viewable on our web portal, in our mobile application and by our desktop application reader. For initial proof of concept the video may be fetched from database as an id through reference on the portal and application, but for the commercial product and desktop application readability, the video will be serialized and embedded into the system. Java will be used for development as with its thousands of APIs, it can help us in making this file format development more efficient.

1.4 REPORT ORGANIZATION

The report is organized into four chapters.

Chapter 2 explains current and future trends of video resume and gives Literature Survey done before the initiation of project.

Chapter 3 gives insight into methodology and requirement analysis used in building the overall system for the scope of this project using different technologies and platforms.

Chapter 4 shows the testing of the project with its working results and outputs.

RELATED WORK AND LITERATURE SURVEY

2.1 HISTORY OF RECRUITING AND JOB APPLICATIONS

2.1.1 History of Job Search, Before Jobs [0]

The notion of jobs and choice in one's career is a modern invention as in old times e.g. Bronze Age no students had to choose any jobs other than hunting or gathering as a career and the workers did not have to fill any application for job. What a person did was determined by his cast, clan head or elders and new solution, change or properly was highly discouraged. People hardly travelled more than 25 miles around their town, and mostly were peasants and slaves to others. With time, people realized the need for betterment and knowledge was gained to fulfill the health, protection and social needs of people and thus advancements were made. With time jobs were specialized and populations grew to make cities and institutions such as Army. Factories were developed at small scale and jobs were given solely on basis of the skill of workers thus choosing the career was easy with a limited options for jobs.

2.1.2 History of Job Search, the Industrial Revolution [2]

The Industrial Revolution started in England in mid-1700 and improved the productivity of manufacturing processes, transportation, and energy so greatly that independent household production was overwhelmed by the vastly greater output of the new methods. It was the beginning of the transition from ancient production methods to large scale production capacity with more skilled labor and new specialized technologies. With these advancements large firms were developed and produced more and more and required more workers as a result. Managers were

appointed at higher and lower levels for specialized functions and the responsibility for recruiting, training; coordinating, teaching and managing the new workforce and these new managers fell to the managers for better production and running of firms. For such recruitments on industrial scale, a methodology was required to post and get the people for jobs. It marks the beginning of newspapers.

2.1.3 History of Job Search, Newspapers [0]

With industrial revolution, printing presses were invented and newspaper was printed and floated at a smaller scale but it became a big source of information sharing for masses and a source of business for owners. It was used for advertising, printing local information and other business purposes until the age of internet came and newspapers went international. Newspapers also helped structure the business practices around recruitment advertising, and therefore recruiting and the job search itself and reigned as the method for recruitment for over 150 years. Radio, TV and general interest magazines never produced the right combination of cost vs. audience composition to make them effective recruitment advertising vehicles. In the 150 years of newspapers' dominance in recruitment advertising, there is not one significant product innovation to mention may be because in the 20th century of the life time employment trend, the paycheck was a thank you from the employer, labor mobility was limited and so recruitment did not demand it.

2.1.4 History of Job Search, 20th Century [0]

Recruiting in the 20th Century worked in a way where Job-seekers replied to ads they saw in the local newspaper by owners of recruitment agencies. The hiring manager would then receive a sufficient number of resumes which were evaluated to select candidates for further review. Moreover a specialized profession of executive search consultants was brought to system which remains in the modern search business. This hiring process had long cycle times, opacity of market information, the impossibility of conducting truly thorough and large scale searches and power rested with large firms.

Components of the 20th century model included:

- ✓ Job-seekers applied for a small number of jobs, for which they were reasonably qualified, because of the time, costs and aggravation involved.
- ✓ Recruitment advertising targeted the local market, was sold at expensive rates, and allowed for abbreviated announcements of position openings, but not for a broader brand message.
- ✓ The recruitment function was a tactical function for processing candidates through the application process, not a strategic function for securing the highest quality employees.
- ✓ The hiring manager, possessing greater domain expertise, was often the first-line screener of resumes for an open position as there were a relatively small number of applications and resumes to review. **Without** needing to put down on paper the qualities and characteristics of the ideal person for the job, the manager was therefore frequently able to avoid the lengthy process of interpretation and explanation of job requirements to the internal recruiting or HR function.
- ✓ The workplace bargain in the 20th century traded lifetime employment for lifetime development a professional purchased (and the company offered) career development, employment security, and the avoidance of job search costs throughout his career. And in return the he sold his loyalty, steady work performance, and a reduced need for companies to constantly monitor job satisfaction, job tenure, and compensation to the company
- ✓ Executive search arose in the 20th century to provide high-touch services which the low-touch, high-volume recruitment ad could not
- ✓ With smaller labor pools, lower labor mobility, and less effective means of categorizing workplace attributes lead to more generalized searches in the 20th century than presently

2.1.5 History of Job Search, 20th Century Ends [5]

The 20th century Job Search died on January 31st, 1999. That night, Monster.com aired its first Super Bowl commercial. The ad, “When I Grow Up”, is

one of the top ten Super Bowl commercials of all time. The add itself wasn't much the quality or that Monster was behind it, it just was welcome of a new era that made that night the end of the 20th century model as a now single brand could reach job-seekers across the country, aggregate them, and then allow access to employers for all of their local recruiting needs through the power of internet. The transformation of recruitment advertising that began that night was to continue for years ahead but with that the era of newspapers ended.

2.1.6 History of Job Search, the 20th Century Model Breaks [6]

The Job Search in the first decade of the 21st century has evolved like a complicated mess which has led to more accessibility of employers to employees and employees to employers but the model is leading to inefficient, frustrating outcomes as there are no guidelines how to go about it. The first major reason is the arrival of internet revolution as with large information network created, the cost to finding job information and apply for them has reduced to zero and job seekers have now started showing a weird behavior of only focusing on number of zeros in salary when they apply for jobs rather than focusing on what they really need to apply for. And this creates mess for employers who are looking for right candidates to apply for their specific jobs. The second reason has been evolution of career paths away from lifetime employment and more awareness among job-seekers as now they switch companies more often and became more mobile.

To summarize, the Job Search has changed quantitatively as

- The cost of information transmission has dropped to zero.
- The number of jobs a professional will have in a lifetime has increased by a factor of 10.
- The size of the addressable audience has grown 100x.
- Applications for a job are 10~100x more numerous than they were in the 20th century.
- The number of vendors shrank by 1/100th.

2.1.7 History of Job Search, Job-Seekers in 21st Century [0]

When it comes to job seeking, HR managers and recruiters repeatedly report that

- Job-seekers generate too many applications for jobs
- Frequently applying for jobs outside their expertise, geography, and qualifications.

Some major characteristics of job search in 21st century are as follows:

2.1.7.1 Job boards

The rise of internet job boards has contributed mightily. The increased time and cost of finding and applying to jobs — plays into job-seeker behavior in an insidious way. With mass job boards like Monster and CareerBuilder pushing aspirational marketing messages to the general public, inappropriate applications are not only no longer discouraged, but actively encouraged.. Click to ‘apply’ facility on such job boards is looked upon as a productive activity by job seekers but unfortunately, it take them away from the uncomfortable, but important, activities of following up and networking into jobs they’ve already identified. Our solution in particular aims to make sure that this problem is addressed for both the job appliers and job recruiters.

2.1.7.2 Career path

The most obvious difference between 21st century and before is the decline of lifetime employment. Employees instead of gaining the too long loyalty with a firm see the long employment as inability to gain interest from opportunities outside so the velocity of changing jobs has increased and on average six-figure worker will change jobs every four years according to facts without a consistent relationship or mutual sense of obligation with one, lifelong employer. Professionals create their own growth throughout their careers by moving through different industries, functions, geographies and company sizes.

2.1.7.3 The 21st century job search is a direct marketing problem

The factors above mentioned have changed job search from paper resume sending to just click and apply creating several problems for both parties. More specifically, the 21st century job search is a complex marketing problem where like direct marketing the creation of an effective message is important which is to be sent to likely ‘buyers’, in which a ‘call to action’ is the paramount goal.

Similarly, the desired outcome of the job search is for the job-seeker to get their message in front of the right person at the right time to secure an interview which can lead to a job offer. This combination of message, audience, and targeting, is new for the job search, and has not yet achieved widespread understanding by the professionals it affects. In case a person has to apply for jobs, out of the thousands of recruiters, a few hundred will have positions for which the professional would be considered. And out of that segment, the reality is that perhaps only a dozen will actually end up interviewing him. To get to those interviews, he first needs to determine who to contact. Once he’s identified likely prospects, he’ll need to market to those buyers through multiple channels: in writing, by phone and in person interview. And in that case the written resumes where his capabilities, achievements, skills and talents, are mentioned are considered no different than a direct mail marketing piece. With the old model fading away, people need to know advanced procedures of marketing jobs and, getting the right people as most professionals find the 21st century job hunt confusing, disorienting and depressing.

2.2 AVAILABLE OPTIONS TO APPLY FOR JOBS TODAY

- Read the Job advertisements on newspapers/TV commercial and apply with a printed CV and cover letter delivered to employer by mail or by hand, which leads to an interview or selection.
- Read the Job advertisements on newspapers/TV and directly go for an interview taking your resume along leading to an interview and selection.

- Read the Job advertisement on newspaper/TV and apply online through CV submission or filling application leading to an interview or selection.
- Read the Job advertisement through internet search/Facebook /website, and apply online through textual CV and cover letters [email, upload] leading to interview or selection
- Get job openings from personal contacts and apply through different means mentioned above
- Get job openings from different resources and apply online through image and textual formatted CV with cover letter/answering questions
- Apply online and then give a job application test
- Apply through link den with private contact with employers building your profile and contacts
- Applying through video resume (latest concept) and interviewing online
[Our solution target]

2.3 APPLYING ONLINE [0]

There are thousands of websites where you can post your resume online and complete an online job application. Applicants either apply online via a job board, like Monster.com, Nokri.com, or apply online directly at the company's web site.

In some cases, job seekers are required to register and to build an employment profile. Once you've built your profile, you can apply for jobs online and set up search agents to email you when new jobs are added to the system. Applicants can then apply online for specific positions at any time that is convenient for them, with just a few mouse clicks. At larger employers, and on many job sites, job seekers can keep track of the positions they have applied for.

Some sites let you upload an existing resume with the click of a button. On other sites, you can copy and paste from your resume or use a resume builder that is incorporated into the application system. Once you have uploaded your resume,

you will be able to search for jobs that interest you and submit your application or resume with a click of your mouse. If one is interested in working for a particular company, he/she should visit their website and follow instructions to apply. To apply online on typical systems, it needs your contact information, educational background and employment history. You may also be asked what days and hours you are available to work, about a few other relevant questions and preferences.

Another way to apply is take an online Employment Tests and they Depends on the companies who need to know their employees more through this aptitude or theory subject bases test also called talent assessments, employment tests, or career tests. Employers make this requirement do this to shortlist candidates for interview and often do it in conjunction with an online job application, so candidates will take the test when they apply for a job.

2.4 LATEST TRENDS

Since the beginning of the year 21st century a new tool the **Video CV** started to be developed which was a new way to present skills and capabilities of job seekers and make it easy for the employers to shortlist candidates. This new way of presenting the credentials trends from the success of You Tube and the increasing use of the Internet by young people. Today, the video CV tool opens new doors in the world of job seeking, one of the way available to let know who we are and what we can do through a very interactive way of presentation. According to some employers it is possible to imagine that it is not far the moment in which the written, traditional CV will be replaced by the interactive digital presentation of job applicants.

Our solution is targeted for this specific trend along with the textual and image data embedded in one single format with proper search tags to view each data type individually and in one format, making the job applications easier for employees and hiring processes easy for employers.

2.5 RESEARCH INTO VIDEO CV [12]

Of particular importance is the “2007 Video Resume Survey” [13], has been realized by Vault.com. The results of the survey give light to the future of the Video CV, stressing its importance and efficiency in the market

2.5.1 Survey Results

Table 2-1:2007 Video Resume Survey Results [14]

89%	Employers stated that they would watch a video CV if it were submitted to them
17%	Employers interviewed people who had viewed a Video-CV
52%	Value Video CV’s due to its ability to assess a candidate's professional presentation
76%	Advice to keep Video CVs under two minutes
47%	Advice to keep Video CVs under one minute
56%	Employers believe in Video CV’s becoming a common addition to future job applications.

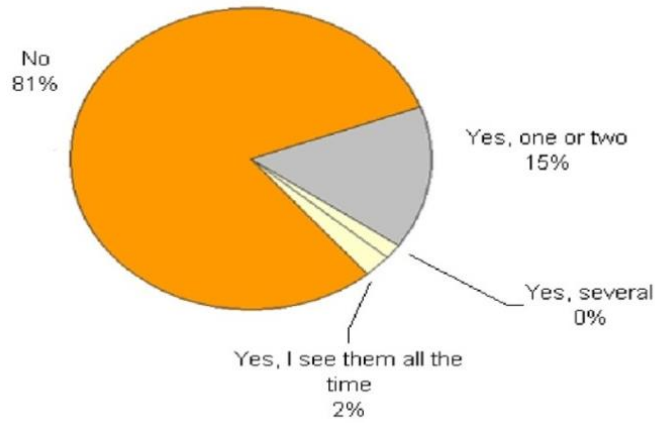


Figure 1: Percentage of Employers that have ever seen a Video CV

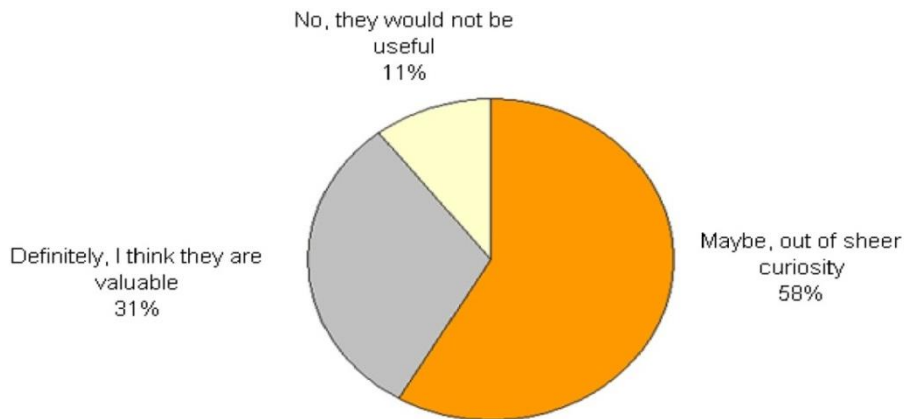


Figure 2: Percentage of Employers who would view a Video

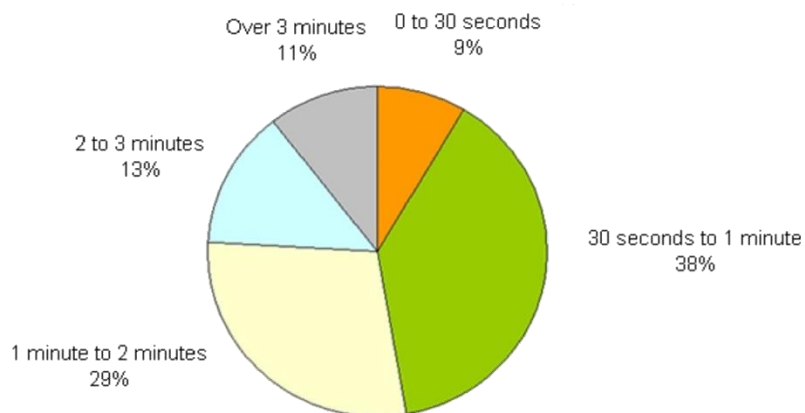


Figure 3: Ideal length of a Video CV according to Employers

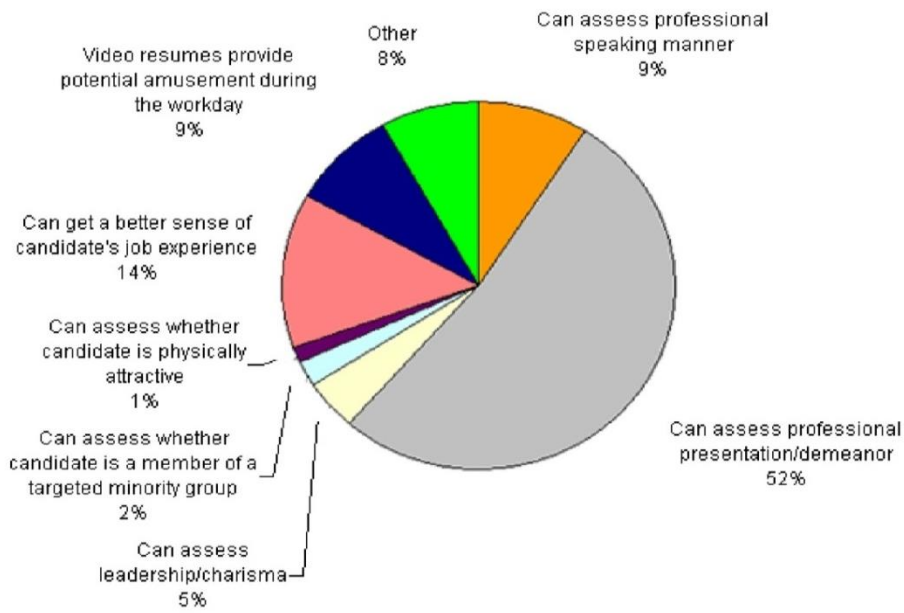


Figure 4: Opinion about the utility of the Video CV tool

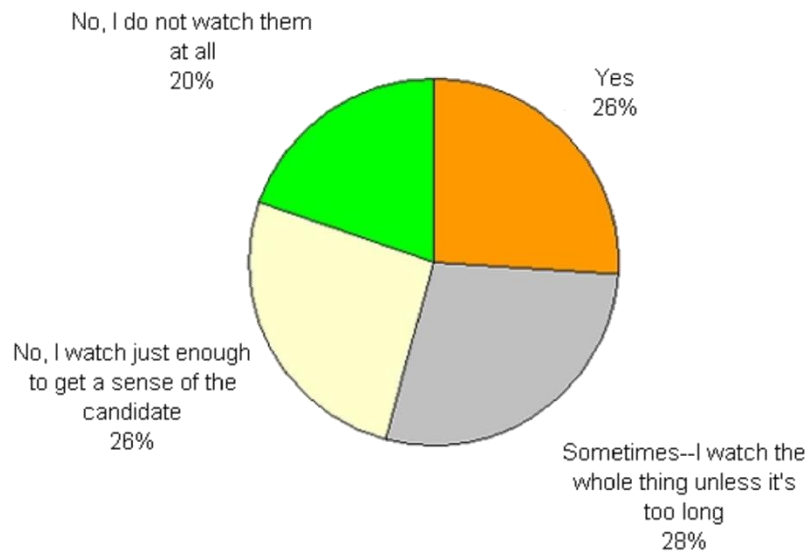


Figure 5: Percentage of Employers who watch the entire video CV

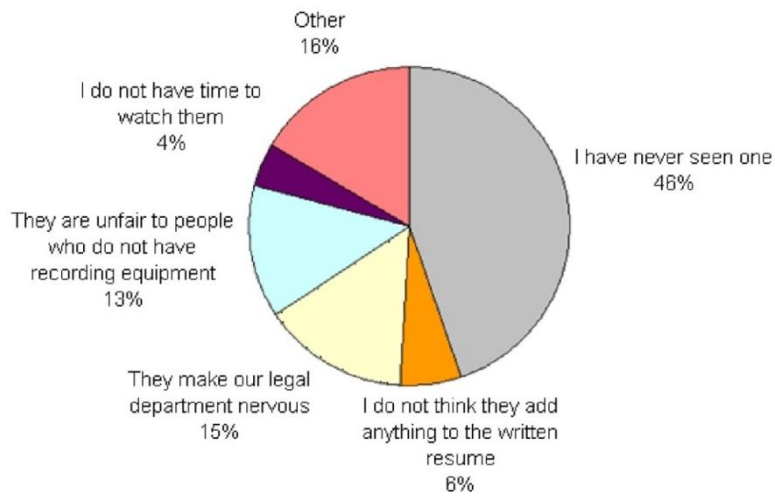


Figure 6: Opinions about value of the Video CV tool

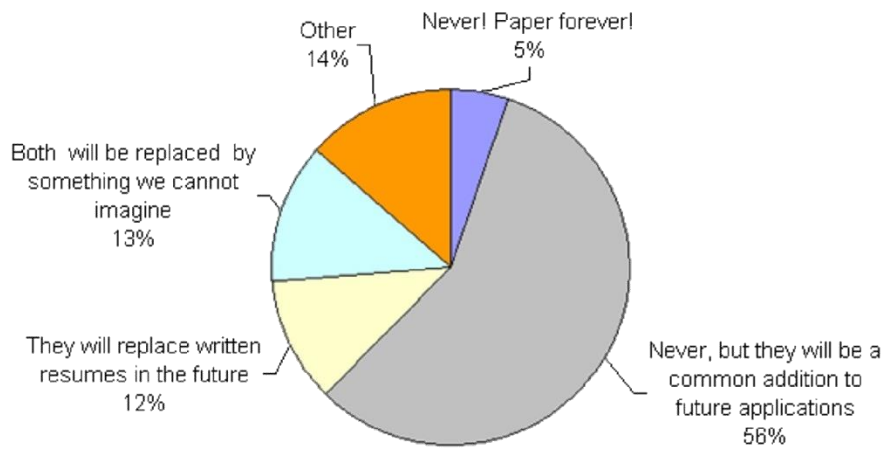


Figure 7: The future of the Video CV seen by the Employers

Source of figures: 2-1-2-7: "The 2007 Video Resume Survey by Valut.com"

2.6 EXISTING SOLUTIONS

2.6.1 Tools for Employers

RecruiTV: It combines concepts of social networking and dynamic web media. It is possible to upload audio and video files and turn it into an employment branding video for Companies' Website Career Pages, or help creating texts and other media to be sent out via mobile messaging to potential new employees' mobile devices.

Career TV: This is a web site provided by a company based in San Francisco created in order to help students and young professionals to find a job. Employers have the possibility to upload videos about "What it's like," and "What it takes," to work at their companies.

Interview studio: Employers request pre-built Candidate Showcases which include (all on one screen) the resume, endorsements, results of a 5th generation Assessment test, a video-taped interview, salary and preference data, LinkedIn Profile, button links to Google's information about them, their portfolio docs, their blogs, their websites and any other information they choose.

Interactive applicant: It is a Canadian company providing video interviewing tools with basic Applicant Tracking Systems and Job Board tools.

Live hire: It is provided by Live Hire that has built a chat-room-like product allowing employer to instantly connect and chat with a candidate live via webcam.

Career cam: It is a service allowing employers to do live video interviews with students of 50 colleges across the USA. It has built a web application that leverages an API for WebEx, allowing employer's to schedule and manage live video interviews.

Face hire: It is an American hosting service for employers which want candidates to upload a video but don't have their own infrastructure to handle the video storage or viewing.

Interview screen: Interview Screen is a Pennsylvania website for Employers who can create online interviews inviting candidates to take the online interview using their own webcam.

Interview on demand: This USA website allows employers to create an interview template by adding their own questions to a job file, and then send an email invitation for a candidate to "take the interview".

2.6.2 Tools for Job Seekers

Interview clips: Professionally taped videos realized at a video center in San Francisco of job seekers answering a few set of questions. Staff will coach job seekers before taping. These tapes can then be sent out over the internet to employers.

CV jobaria: Allows Candidates to create a webcam video interview on the Jobaria website based on the job function they are interested in. Responding to about 10 questions, the Candidate creates the video on line and is given a URL link to incorporate into their resume.

Video snapshot, jobrific.com, future resume: Offer an on-line platform on which it is possible to upload Video CV made by applicants through the webcam.

Savvy paper: It is a professionally enhanced video CV that puts together a moving text along with the spoken message in order to capture both visual and auditory attention.

Visual CV: Free, online multimedia digital CV that lets an individual embed pictures, sounds and documents, and then send this template to anyone through email.

Profile builder: The site provides the possibility to create an online personal profile page in a dashboard format, where users are allowed to put links to their Facebook, MySpace, picture sites, blogs etc.

Video distribution (Work blast, Vault.com, Resume tube, Job match pro): They allow jobseekers to upload Video CVs and place them in a searchable database.

2.6.3 Most Relevant Existing Solutions

Hire art [www.hireart.com]: Launched in 2012 as a startup, they use work samples and video interviews to assess candidates' job skills, so that employer can hire all-stars who will hit the ground running.

Spark hire [www.sparkhire.com]: SparkHire.com is a video powered hiring network that connects job seekers and employers through video resumes and online interviews. Launched in 2012, sparkhire.com's mission is to streamline the traditional hiring process through the power of video.

Hirevue [http://hirevue.com/]: HireVue's Digital Interview Platform™ allows users to Create online interview guides with scientifically proven questions, capture structured interview feedback in real-time, watch interviews on demand, share and compare responses amongst hiring teams, and build digital talent pools.

2.7 FINDING: HOW I LIKE BEING HIRED ^[9]

According to a report on “how I like being hired” a person states that “I have filled out some applications over the years, and I want to talk about four

different kinds. The first is the traditional method, where you fill out an application and get an interview. The second is what I call the questioner filter. Another is what I call the application arcade machine where you need to fill in application plus answer 60 questions, and machine decides the interview selection, which is time consuming and wastage if you don't get an interview. The last one is my favorite, where you get interviewed before filling out an application. After being hired you then fill out the application. I love the last method, because the employer is not looking at how I have been, but how I am now. He asks you questions about the skills you have, and even past jobs you have done. If hired, you then fill out the application so he can legally hire you. When being interviewed under this method, I am given a fair chance for employment.”

So this stated that people who want to get hired require that before they fill long applications and answer specific questions (influenced by dishonesty at times), they should be check for compatibility and eligibility for that job and called for the interview then, where once satisfied should be required to fill in the application form.

2.8 FINDING: RESUMES THAT WORK ^[10]

According to the Wall Street Journal, there are more dos and don'ts about resumes than ever before. Some of the most important today are:

- ✓ Focus on your training and relevant work experience. Use the same keywords that are in the job description.
- ✓ Make sure the resume highlights quantitative data about your accomplishments and career progression.
- ✓ Remember that most employers spend one minute, tops, on each resume. Be concise.
- ✓ Concentrate on accomplishments within the past five to 10 years. Don't give equal weight to older work.

- ✓ Consider using info graphics. Graphics can be a good way to convey accomplishments at a job. Think about including in additional documents separate from the resume.
- ✓ Mention awards or specific accomplishments. “You want to figure out how to stand apart from your peers with the same basic skills,” says Joanne Pokaski, director of workforce development at Beth Israel Deaconess Medical Center in Boston, in the Journal article.
- ✓ And, as always: make sure the document is free of spelling errors and grammar errors.
- ✓ Consider including a QR* code. Adding a bar code to a paper resume can send employers directly to online portfolios, additional application materials or detailed contact information. It also is a quick cue into your tech savvy. Include a short caption that explains what the QR code will go to.

***Quick Response** codes are basically two-dimensional bar codes that can be interpreted by a mobile phone camera equipped with a code-reading app. Once the QR code is scanned, for instance, the Web address embedded in the image pops up on the phone’s browser, saving the phone’s owner some typing.

2.9 OUR SOLUTION

Today, being social is the operating system behind any business activity. Social media has a transformational impact in social sourcing and recruiting, and as a result, creating and nurturing talent communities is now at the forefront of the agenda of corporate recruiters. Building and materializing these talent communities to hire faster, better and more effectively has become a top priority for forward-thinking corporations.

Our solution combines the concept of cloud based solution of Video Resume along with specific sections search tags combined with textual and image data all combined in a new propriety format, which will be read by our self-made

desktop application and will be viewable on the web portal, which will cater both employers and employees.

In keeping view “how employees like being hired”, it will do a compatibility check of employees with the employers provided specifications, and if declared eligible for job, they will be able to send their resume with their introductory video, and tagged textual information with images etc. in .new format file online and employer will then view that single file and will have the option to post interview questions in response to those applications.

Keeping in view “Resumes that work”, user will have an option to print their resumes with custom generated views for specific jobs at run time using their defined tags, and information already saved on any standard format of hr.xml. This worldwide available solution will address the issues in the traditional hiring process where officials have problems viewing all the applications individually and not knowing candidates fully before interview. They will be able to reach their targeted applicants through key word search and will get applications from only eligible candidates. The tag feature will enable them to view specific columns of applied candidates in one way to make a quick comparison. Our solution is all about embracing new technology to get positions filled and committed to helping people find their next job through computer and mobile device. Our goal is goal is to simplify everything for job seekers and recruiters and connect them through the power of online video, usage of tags for search, run time view generation, personal message board, chat feature, and a new CV format, which is intended to be a format for CVs at international level.

METHODOLOGY

3.1 SYSTEM COMPONENTS AND MODULES

3.1.1 Modeling Module

In this part entity relationship diagram of system database had to be designed and it was taken care that it was good enough to cater the future requirements. Relational and Logical views were created and modified for the best fit.

Tools: Datamodeler-3.1.4-710

Technology: Java/ SQL

Justification: It was an easy to use tool recommended by our co-advisor after experimentation with IBM Rational Rose, MS Visio and some online tools. This tool was the most effective one as it was easy to mode, modify and generate SQL scheme using this tool.

3.1.2 Database Implementation Module

Tools: MySQL Server 2008

Technology: SQL Database

Justification: MySQL is integrated in WAMP and is easy to use with large databases providing standard storage and querying procedures.

3.1.3 Web Portal Development Module

This module was the biggest and most important to the whole system. The work on the design, implementation and deployment of the web portal with the

basic functionality for its targeted users include the account management and forms features took the longest time after design was complete. This was done in steps starting with the designing of simple UI and the forms for data storage from user. Then it was integrated with database with sessions and other scope variables to create link between pages, and check for compatibility with different types of data including text, images and videos. Finally the format module developed separately was integrated with it to provide full functionality to user and extra advanced features including tag search and intelligent resume generation were included to make it a complete usable system.

Tools: Net beans 7.2, Adobe Dream Weaver

Technology: J2EE, Java Server Faces (JSF), Prime Faces API, Java Multimedia Framework (JMF) API, HTML, XHTML, CSS,

Justification: J2EE is an open source enterprise level application development platform that allows us to develop enterprise level applications it also contains such libraries or API that will help us a lot to complete our desired functionality easily. The best part about J2EE is that it is very stable when it comes to scalability and its new features in JSF make it very easy and dynamic to use. The presentation layer separates from logical layer and thus gives more dynamic and independent control

3.1.4 Proprietary Resume Format

In this module, a new file format has been developed that is unique in its type as it contains textual data combined with video and images. This format is viewable online and on desktop at the same time with our desktop opener and the person using the application can send his/her video resume anywhere with a new file extension.

Tools: Net beans IDE 7.2

Technology: Java JDK 1.6

Justification: Java is an open source platform for development so it will be a lot easier for us to develop the format using some open source libraries available for video encoding, reading and writing streams of data, serialization of data and making UI to arrange it.

3.1.5 Proprietary Resume Format Reader

This module consists of making a reader desktop application which will read the contents of the new file format, as the pdf is read by Adobe Acrobat Reader.

Tools: Net beans IDE 7.2

Technology: Java

Justification: Java as mentioned above comes with an open-closed license which is very useful in creating applications with an open source license and then having them proprietary on a close license and the development on this becomes very easy with the availability of many APIs available to help in making of such tools. Moreover it is platform independent, scalable and stable when it comes to large scale corporate applications.

3.1.6 Mobile Application Development

In application development module we will focus more on very simple User Interface having two interfaces, one for the employee and the other for the employer and will be a thin client to be connected to the web portal for the employee to stay connected to their online video resume portal profile.

Tools: Xcode 4

Technology: iPhone iOS

Justification: iPhone has got very big market and there are 7,00,000 of iPhone applications right now in the market and among them there is no application matching our concept .So it's a great opportunity for us to excel in the market.



Figure 8: System Components and Modules

3.2 SYSTEM DESIGN AND ARCHITECTURE

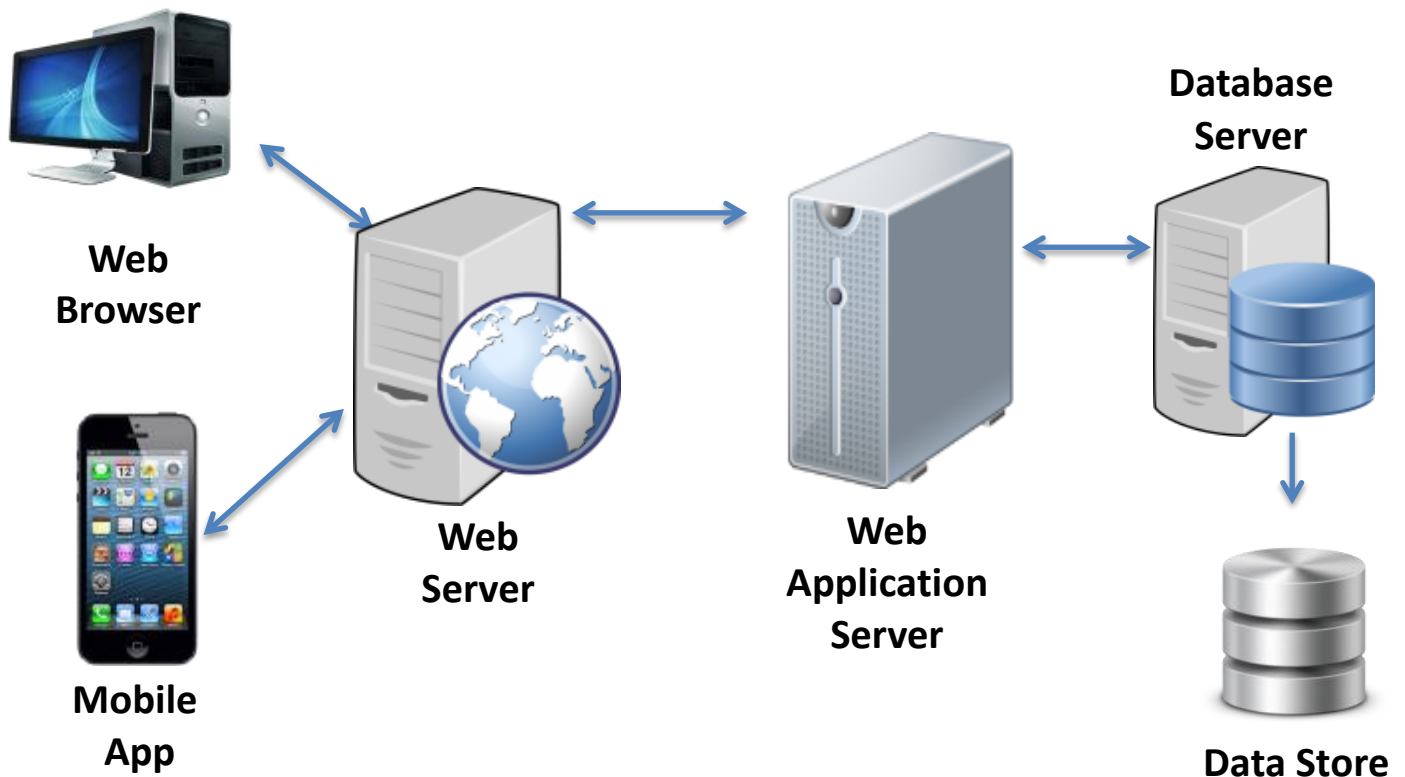


Figure 9: System Architecture and Design

3.3 FILE FORMAT IMPLEMENTATION METHODOLOGY

- Class based structure of all the components of the format was made
- Classes made serializable to be writeable and useable in the format
- Categorized and arranged components in a standard way as resume
- To be readable and useable on the other side [Maker + Reader]
- Categorized all the components and implemented them in a way that they can be readable and writable as well
- Used object oriented approach for making hierarchy
- Used class structure to make it dynamic
- Used JMF framework for embedding video and audio
- Format was first implemented on desktop application and later shifted to online environment to be generated and viewable online

3.4 DATABASE DESIGN

The design for database was changed several times as to fit the most flexible system for the web portal as per the guidance of advisors. The testing module included in the database in an optional separate module to be implemented later as part of the fully developed commercial product. Rest of the system has been developed, implemented and tested for the functionality with the hiring platform.

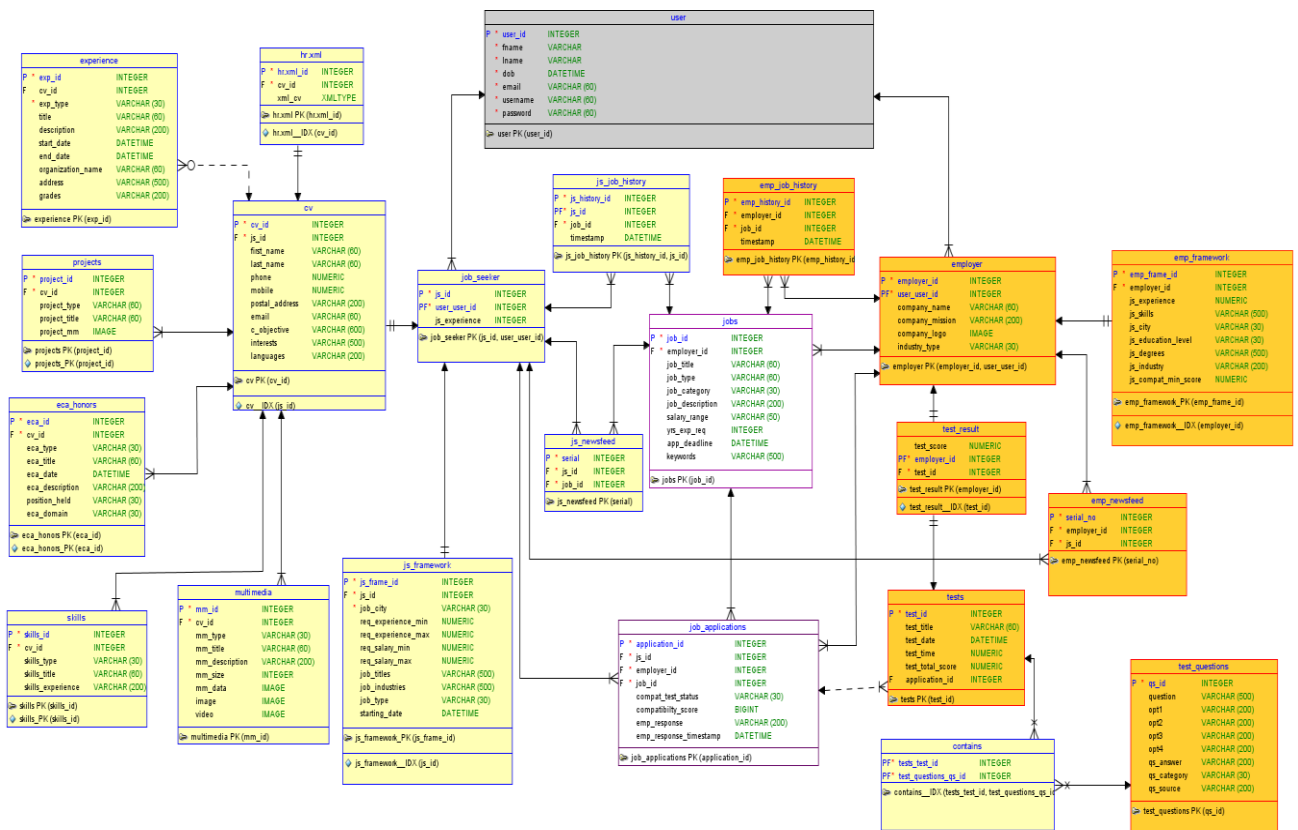


Figure 10: Entity Relationship Diagram (ERD) of Database (Relational View)

3.5 iPhone MOCKUPS DEVELOPMENT



Figure 11: iPhone Mockups

3.6 SCHEDULE OF DELIVERABLES

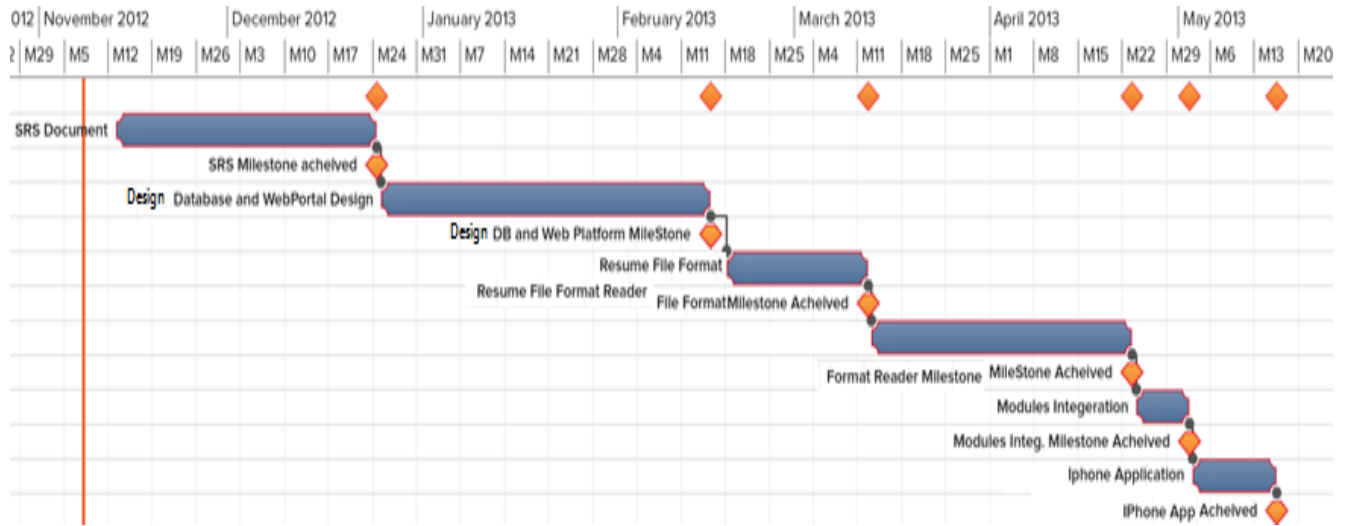


Figure 12: Gant Chart Schedule of Tasks/Deliverables

RESULTS

4.1 EXPECTED END PRODUCT FUNCTIONALITY

4.1.1 Hardware

- ✓ No hardware is required for the deployment of the end product
- ✓ For Development MacOS enabled Apple Systems will be required for Development of iPhone Application
- ✓ Windows/Mac/Linux Enabled Systems to develop Web application and Databases in Net Beans IDE, which will later be shifted to some paid hosted server or cloud when scale increases

4.1.2 Software

- ✓ Intelligent System for matching best job seeker with the job posted
- ✓ System that will generate and handle our proprietary video resume file format.
- ✓ Desktop software to read the new file format
- ✓ A mobile application for employer and employee to manage and view their accounts
- ✓ Functionality to generate printable hr.xml specific standard resume.
- ✓ Business model of charging employers for job postings, shortlisting candidates and advertisements

4.1.3 Employers

- ✓ Ability to post jobs.
- ✓ Ask questions from job seekers which will be answered by employees in a video
- ✓ Accept applications that were built on our own proprietary file format
- ✓ Management Systems for handling each job leads through tags

- ✓ Message board and chat with employees

4.1.4 For Job Seekers

- ✓ Ability to create user profile
- ✓ Ability to create resume on our proprietary file format
- ✓ Ability to apply to Jobs and Answer questions in video
- ✓ Generate intelligent resumes in standard formats
- ✓ Check eligibility for job before applying to save time
- ✓ Message board and chat with employer
- ✓ Subscribe to different employers

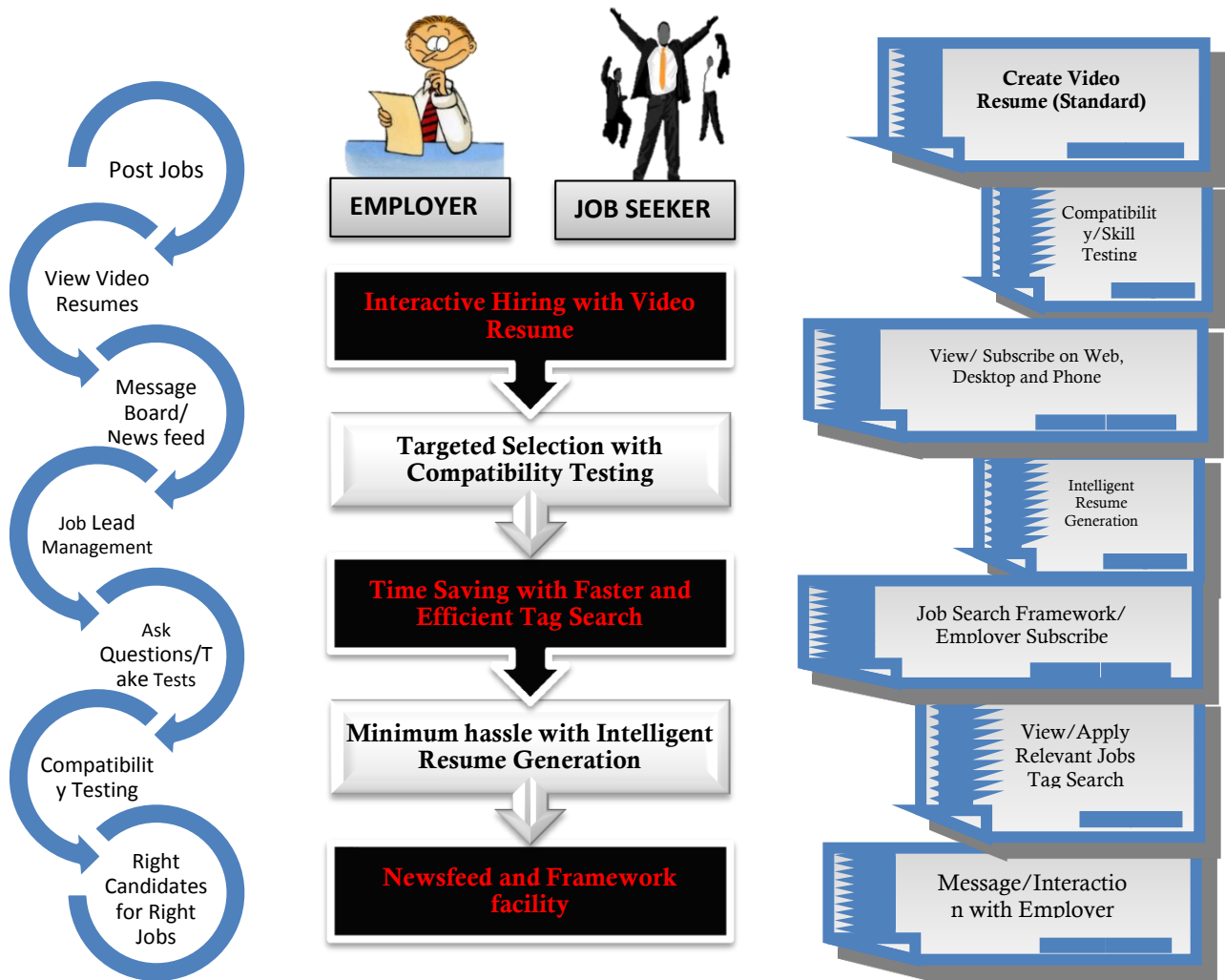
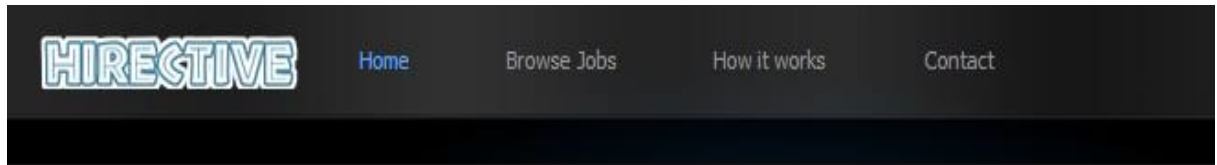


Figure 13: Expected End Product Description Employers and Job Seekers

4.2 RESULTS ACHIEVED



Figure 14 : Hirective Web Portal Home Page



SIGN UP

First Name

First Name *

Last Name

Last Name *

Date of Birth

YYYY/MM/DD *

Gender

Select One ▾

Email

Email Address *

Login

esim123

Password

Sign up

Featured Employers and Advertisements



[>> View More](#)

Figure 15: Sign up Page for Users

FRESH JOB POSTING

Job Title

Job Type

Job_category

Job Description

Salary Range

Experience Required

Application Deadline

Key Words

Figure 16: Job Posting Employer

EMPLOYER DASHBOARD

[Employer Home](#) | [Message Board](#) | [Post Job](#) | [Search Candidates](#) | [View Applications](#) | [Edit Profile](#) | [Employer Framework](#) | [Employer Newseed](#)

EDIT COMPANY PROFILE

Company Name

Company Address

Company Type

Company Mission

Company Logo

Figure 17: Company profile Builder

EMPLOYER DASHBOARD

[Employer Home](#) | [Message Board](#) | [Post Job](#) | [Search Candidates](#) | [View Applications](#) | [Edit Profile](#) | [Employer Framework](#) | [Employer Newseed](#)

SET FRAMEWORK

Job Seeker Experience

Job Skills

Job City

Minimum Education Level

Degrees Eligible

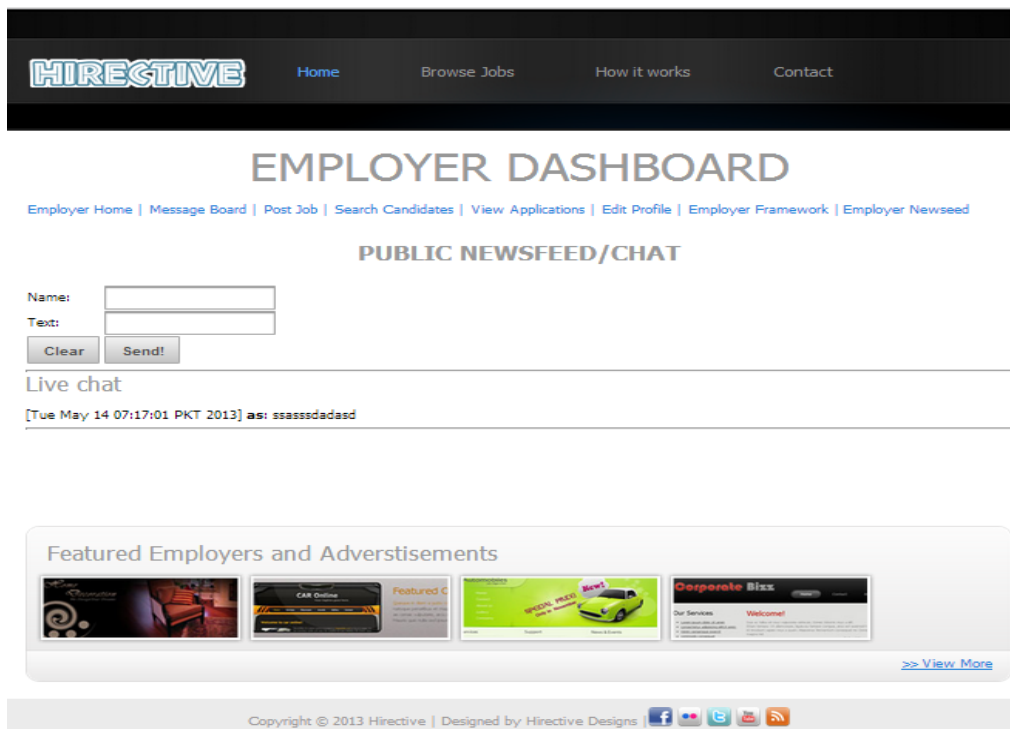
Separated by commas

Industry

Minimum compatability Score

[Save Framework](#)

Figure 18: Candidate Search Framework for Employer



The screenshot shows the Hireactive Employer Dashboard. At the top, there is a navigation bar with the Hireactive logo and links for Home, Browse Jobs, How it works, and Contact. Below this is the 'EMPLOYER DASHBOARD' header with a secondary navigation menu. The main section is titled 'PUBLIC NEWSFEED/CHAT'. It includes a form for posting a message with 'Name:' and 'Text:' fields, and 'Clear' and 'Send!' buttons. Below the form is a 'Live chat' section showing a message from 'as: ssasssdadsd' on 'Tue May 14 07:17:01 PKT 2013'. At the bottom, there is a 'Featured Employers and Advertisements' section with four promotional cards for 'Call Centre', 'Featured C...', 'SPEEDY WHEELS', and 'Corporate Bizx'. A '>> View More' link is present at the end of this section. The footer contains copyright information for 2013 Hireactive and social media icons for Facebook, Twitter, LinkedIn, YouTube, and RSS.

Figure 19: Public Newsfeed/Chat

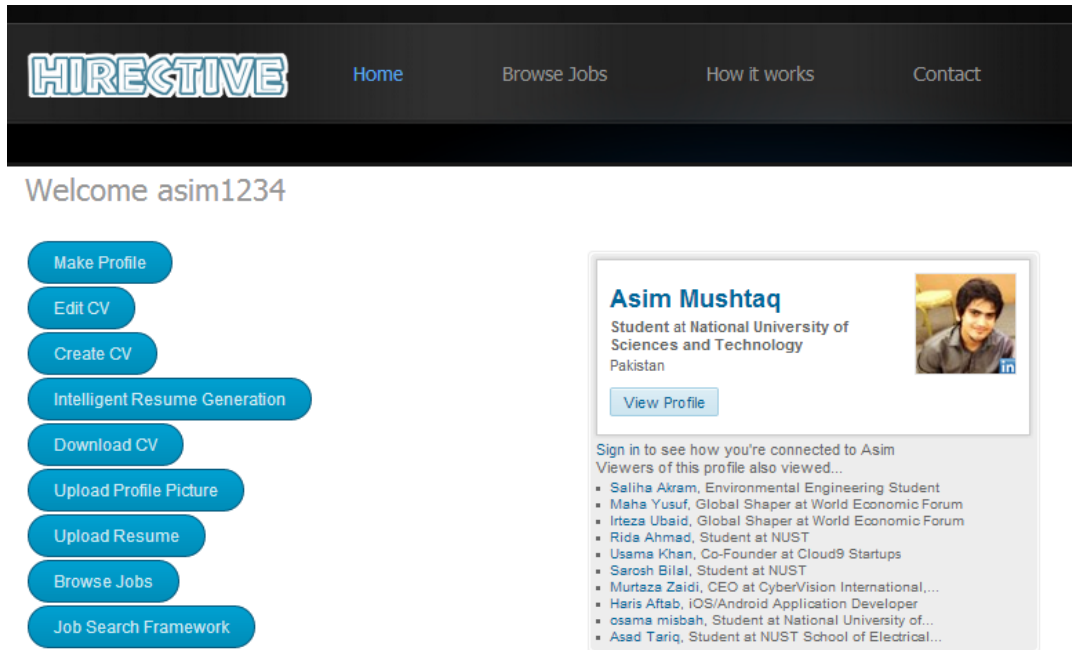


Figure 20: Post Sign In Page Job Seeker

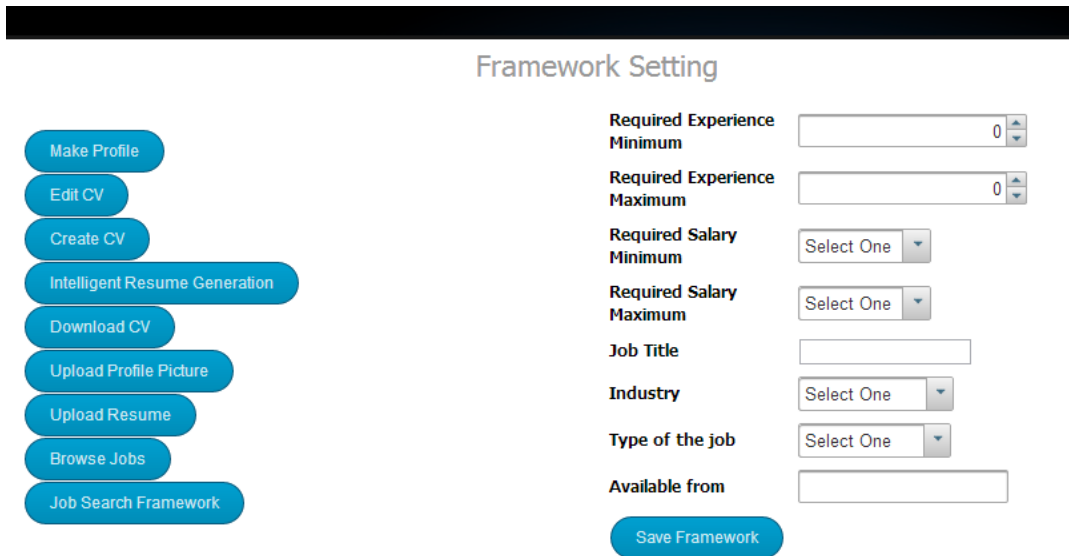


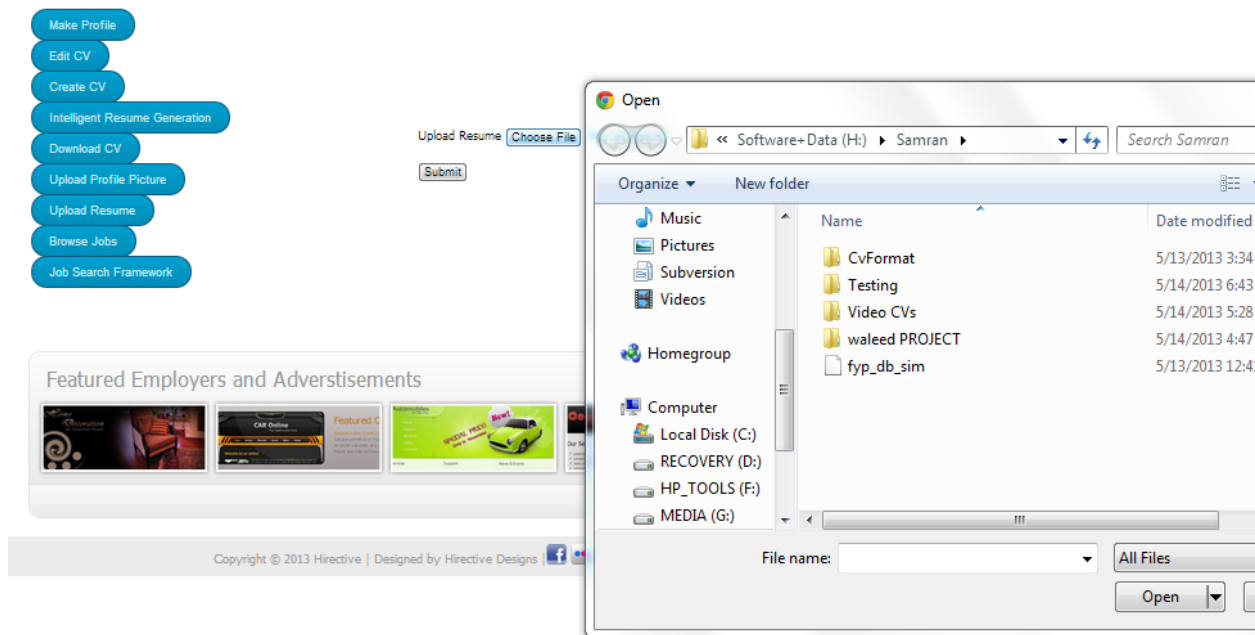
Figure 21: Job Search Framework Settings

Enter the Type

Enter the Category of Job

Job Title	Job Type	Job Category	Job description	Salary Range	Experience Required	Deadline To Apply	Apply	Message	Message
php	Internship	Engineering	jsjsj	10-15000	1	2013-01-14 00:00:00.0	<input type="button" value="Apply"/>	<input type="button" value="Message"/>	<input type="text"/>
Java	Regular	Computer Science	nothing	10-67	3	2013-01-14 00:00:00.0	<input type="button" value="Apply"/>	<input type="button" value="Message"/>	<input type="text"/>
Asp.Net	Regular	Engineering	nothing	10-15	1	2013-01-14 00:00:00.0	<input type="button" value="Apply"/>	<input type="button" value="Message"/>	<input type="text"/>

Figure 22: Job Search Menu



The screenshot shows a web interface for resume uploads. On the left, there is a vertical menu of blue buttons: Make Profile, Edit CV, Create CV, Intelligent Resume Generation, Download CV, Upload Profile Picture, Upload Resume, Browse Jobs, and Job Search Framework. In the center, there is an 'Upload Resume' section with a 'Choose File' button and a 'Submit' button. On the right, a Windows file explorer window is open, showing the path 'Software+Data (H:) > Samran'. The file list includes folders for Music, Pictures, Subversion, and Videos, and files for CvFormat, Testing, Video CVs, waleed PROJECT, and fyp_db_sim. At the bottom of the page, there is a 'Featured Employers and Advertisements' section with several small images and a footer with copyright information: 'Copyright © 2013 Hirective | Designed by Hirective Designs'.

Figure 23 : Resume Upload Menu


Asim Mushtaq

Download

09bitamushtaq@seecs.edu.pk
+92-332-5464024

Profile

To be
Innovative



Skills

<i>Technical</i>	XHTML	Jquery	OS X
	CSS	PHP	Windows XP/Vista
	Javascript	CVS / Subversion	Linux

Experience

Facebook 2005-2007

Senior Interface Designer

Intrinsically enable optimal core competencies through corporate relationships. Fluorescently implement worldwide portals and client-focused imperatives. Conveniently initiate virtual paradigms and top-line convergence.

Apple Inc. 2005-2007

Senior Interface Designer

Progressively reconceptualize multifunctional "outside the box" thinking through inexpensive methods of empowerment. Compellingly morph extensive niche markets with mission-critical ideas. Fluorescently deliver bricks-and-clicks strategic theme areas rather than scalable benefits.

Microsoft 2004-2005

Principal and Creative Lead

Intrinsically transform flexible manufactured products without excellent intellectual capital. Energetically viscuslate orthogonal architectures through covalent action items. Assertively incentivize sticky platforms without synergistic materials.

Education

Figure 24: Standard CV View Online

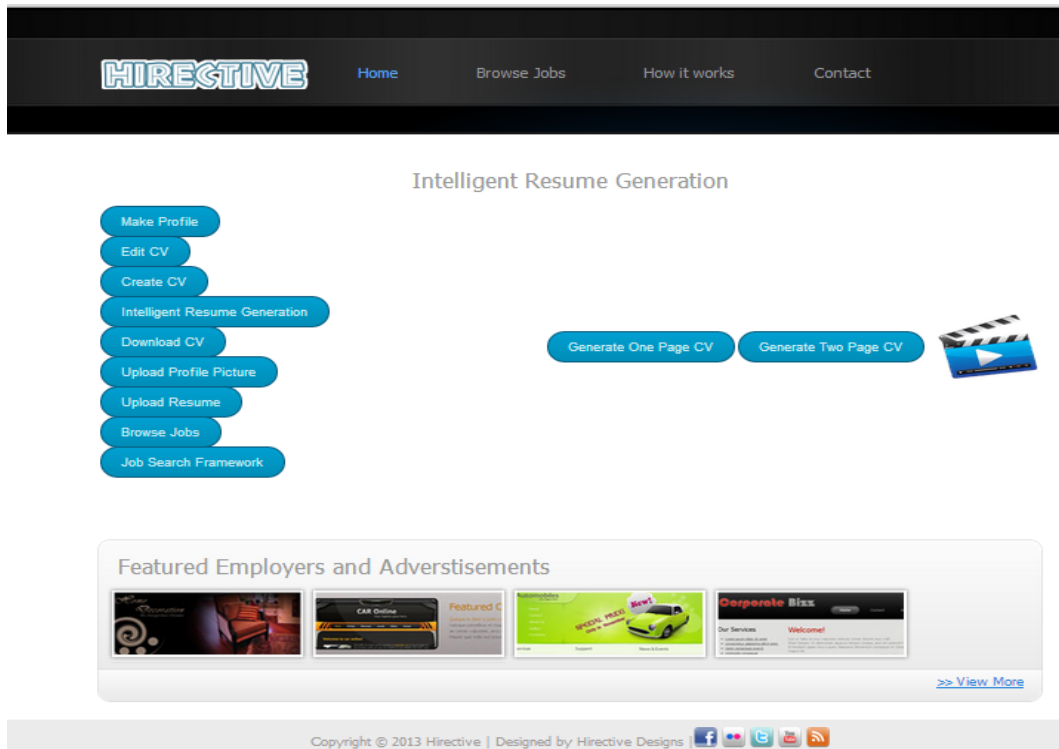


Figure 26: Intelligent Resume Generation

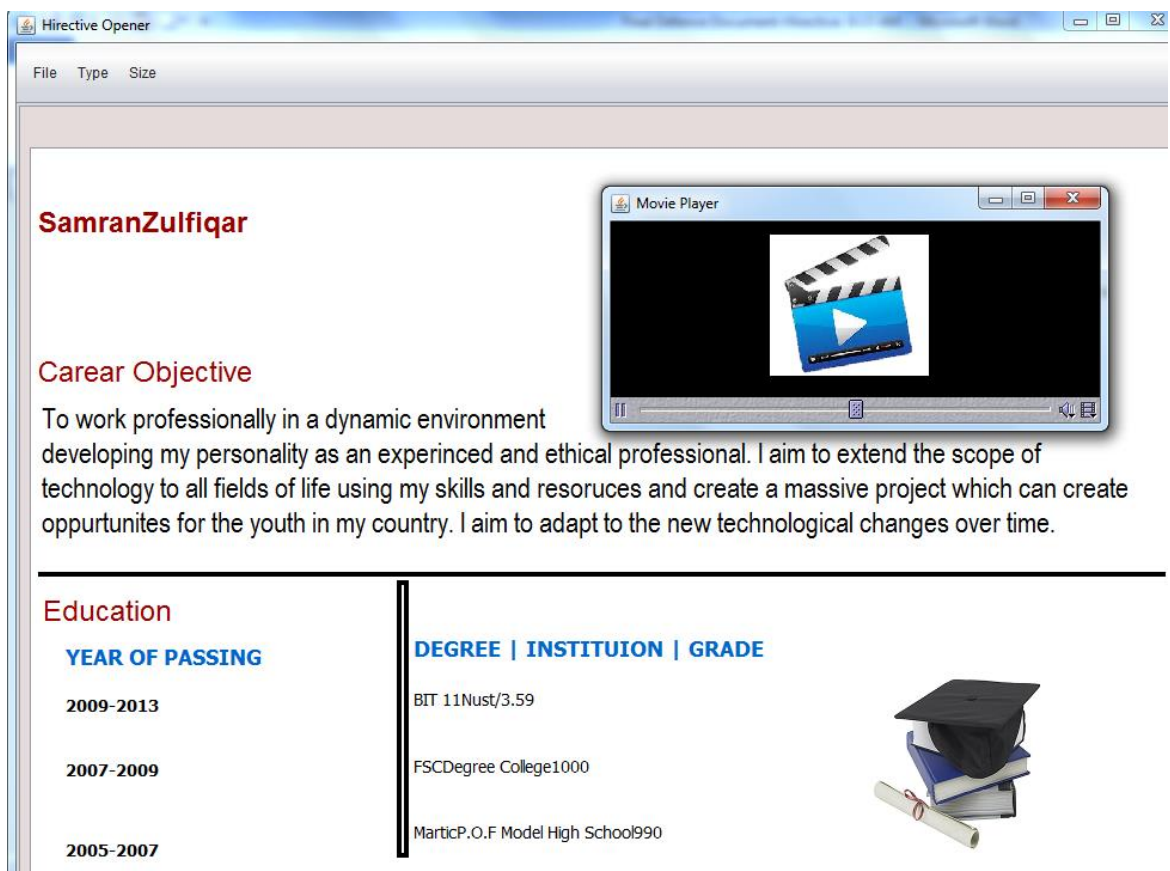


Figure 25: Desktop CV Opener

DISCUSSION

5.1 PROJECT FLOW AND LEARNINGS

- SRS document was made initially [abstract, introduction, literature review
- Database Design made, modified as scenarios required
- UI Design on CSS/HTML using Adobe Dreamweaver learnt and designed
- Java Server Faces learnt and tested for required development
- JSF Front End components developed using Prime Faces Java API
- Research on file format was done in the first phase
- Implementation of File Format [text, image] done initially using Java
- Work on video encoding and embedding using JMF and other coding logic
- File format opener developed on Java as Desktop Application
- General Learning of Code for iPhone App development
- Refined Idea by pitching into National Level Competitions
- New idea generation of Testing of Questions by industry mentors
- New idea generation of Framework settings and Newsfeed
- Web Portal Forms initially developed to take data input
- Employer and job seeker design integration with the database
- Development of standard CV generation module online was done
- Development of intelligent resume generation module was done
- Development of all required modules of hiring platform completed
- Integration of all modules as a single system
- Integration with the desktop application format reader
- UI of the whole system adjusted as per the components
- Development and integration with the mobile application as the last step

5.2 PROBLEMS AND CHALLENGED FACED

- ≠ New File Format development with video encoding
- ≠ Ordering of the objects with in the format was problematic
- ≠ Structure of components in the format
- ≠ Scrollable panel fit problem [Swing Limitation]
- ≠ Video Encoding format support [Frame rate and encoding issues]
- ≠ Video Data serialize/de-serialize in the format
- ≠ Support of different formats for the video
- ≠ Difficulty to read objects in the format with all their properties
- ≠ Making professional layout for the opener without any designer
- ≠ Learning and implementation total new java web framework of JSF
- ≠ Learning and implementation of Java Prime Faces and JMF APIs
- ≠ Corrupt and Expired Software to be used in development
- ≠ Design a massive/correct schema database
- ≠ Identifying the required table/relationships in design
- ≠ Adjusting new changed in the design several times to make it efficient
- ≠ Managing the big hierarchy in database design with Java coding logic
- ≠ Developing intelligent system with accurate compatibility framework
- ≠ Implement standards for resumes
- ≠ Development of the newsfeed in context to framework
- ≠ Integration of whole system in a correct way and accommodating changes
- ≠ Testing of such a big project was time consuming
- ≠ Compatibility issues for some browsers for a few UI Components
- ≠ Further refinement of design and product
- ≠ Funding required for domain, hosting and beta testing
- ≠ Optimizing search and data retrieval
- ≠ Development of a business model for the product
- ≠ Getting users on board to get the user base for the product

CONCLUSION

With all the objectives mentioned and end description given, the project in a big picture turns out to be a solution with the final objective to develop a system to create and share a new propriety format for CV which uses power of video (as showed by the surveys in Literature Review Chapter) combined with textual and image data to make CVS interactive and useful to facilitate both employer and employee. The employer will be facilitated by having a introductory video of the candidate along with the textual and/or pictorial data , which will help him understand the candidate in a better way as to decide for calling him for interview or not. On the other hand for the employee, video resume though may confuse him/her a little but it will prove out to be a best chance to show employer the charm of your personality and creativity in one single file without the hassle of uploading it at other places and sharing links which might make it optional. The standard run time views of same CV through tags will make on demand CV making easy for employee and candidate comparison efficient for employer.

This Final Year Project is aimed at developing a complete commercial product for starting a own startup product oriented company having a sound business model, so requires a stable and scalable system which is marketed and advertised through proper channels once completed to make it accessible to the users all over the world.

The new format which is intended to be developed in this project could be embedded into MS Word and other software at a later stage if the company owners wish to collaborate or purchase it once it is in the market and has sufficient customer validation and stability. The standard could become the first of its kind for CVs all over the world, starting a new era in the world of recruitments.

RECOMMENDATIONS

Among the Front End APIs of JSF, ICE Faces, Prime Faces and Rich Faces are the famous ones, but Prime Faces has the most precise help available and has very good built in UI components to be used. It has some bugs in implementation logic of several complex components which can be corrected by testing it as per requirement of project front end.

For navigation among JSP and XHTML Pages, using the faces.config file is always a better option than simply using the navigation links as it separates the navigation logic from the main coding file and makes it more dynamic and standard in nature. To call functions of Java Beans with multiple arguments from the front end when developing in JSF, it is preferable to use JSP page than using an XHTML page as the front end. Both types can be used simultaneously.

When using SQL Data Modeler, once the file is exported to generate SQL Schema code for a specific server, the file may not be completely compatible with the server type or version specified. A few un-compatible data types like image, video are to be changed to blob for MYSQL 2008, as the data modeler lets the user generate them without checking it for the type of database system the file is exported for. Once the irrelevant statements are removed from the queries and it builds successfully, it is a good practice to export the file directly from the admin menu to be shared among other fellow developers.

For big systems like these, using standard coding practices and naming conventions help reduce the testing and bug finding times, as coding anything is good but coding it right is better and useful.

Future work may be based on this project by extending its scope to implement the testing module for different types of employers as to include the real time scores for candidates in a specified time reflecting their skill set. Testing module along with integration of other standard tests such as MBTI and IQ from their concerned authorities will further improve the compatibility and personality of job seeker to employer and help them understand each other better. The rating and testimonial feature for job seeker can also be added to read views of others about the perspective candidates. Adding more interactive features in UI and the Web Platform, extending the functionality to all mobile platforms using technologies such as HTML 5 which adjusts to all types of mobile interfaces automatically is another feature the system must have to attract all types of users in the smart phone target market. More research and surveys with the HR departments of big companies will further clarify what employers want to see in the job seekers when viewing their job applications for an opening. Similarly the view of job seekers on how they like being hired will further enable positive changes into the overall system.

The project can be implemented on other open source technologies but there will be scalability problems and JSF has an advantage with scalability when handling large user base and large amounts of multimedia and other data.

Once the system gets in working and gets a large user base, a new research area could be of video analytics on how people behave in the intro videos in the video resume. This is a broader field and Video Data Analytics can help make recruitments much easier and simpler for employers and give a chance to candidates to groom themselves and avoid common mistakes in job interviews. From business perspective, video resume making consultancy and grooming is another field which becomes vital when systems like ours are in market and used at a large scale.

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