Job Analytics

Testing Documentation

Daniel O’Sullivan
Student Number: 14307881
Supervisor: Suzanna Little

Table of Contents

Introduction

In this document, I will discuss the numerous tests I carried out in the development of my application, Job Analytics.

Problems my project presents

There are a number of potentials problems in making a python job posting application. First and foremost the application should be reliable, meaning that it should it carry out the tasks that it was implemented to do when requested. Not only that but it should carry out these tasks flawlessly without error (to some degree). For my project, there are a number of key constraints that need to be tested. Some examples are:

- The CV parser of my application should only take one format of curriculum vitae.
- Requirements must be specified in a specific format.
- Applicants shouldn't be able to apply for a job twice.
- When summarizing applicant details, the data should be accurate.
- Views should be restricted to users who aren't logged in or don't have permission to see them
- User should only be able to delete jobs they have created, along with the applicants for those jobs.

Frameworks and libraries used

Unittest

Unittest (also known as PyUnit) is a unit testing framework written in python. It is based off the Java testing framework, JUnit. Unittest provides features such as test automation, sharing of setup and shutdown code for tests and independence of tests from the reporting framework.

Sikuli

Sikuli is an automation framework written in Jython (a mix between Python and Java). Sikuli automates anything you see on the screen. It uses image recognition to identify and control GUI components. Very useful for end-to-end tests.

Coverage.py

Coverage.py is a tool for measuring code coverage of Python programs. It monitors your program, noting which parts of the code have been executed, then analyzes the source to identify code that could have been executed but was not. Good for measuring how much of your code unit tests cover. It’s good for measuring integration test coverage.

Unit Tests

For unit testing, I used the python unit testing framework unittest. I only tested any code or component that i have implemented myself. I won’t be testing any django aspects of my project e.g. testing whether a django import works or not, as this would already extensively tested by Django themselves.

Models

JobPosting Model

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
1	test_job_title	Tests that the field job_title in JobPosting is given proper label	Medium	JobPosting object’s field label for job_title	Field label should match
2	test_employer	Tests that the field employer is given proper label	Medium	JobPosting object’s field label for employer	Field label should match
3	test_address_line_1	Tests that the field address_line_1 is given proper label	Low	JobPosting object’s field label for address_line_1	Field label should match
4	test_address_line_2	Tests that the field address_line_2 is given proper label	Low	JobPosting object’s field label for address_line_2	Field label should match
5	test_city	Tests that the field city is given proper	Medium	JobPosting object’s field label for city	Field label should match

		label			
6	test_county	Tests that the field county is given proper label	Medium	JobPosting object's field label for county	Field label should match
7	test_employer_logo	Tests that the field employer_logo is given proper label	Low	JobPosting object's field label for employer_logo	Field label should match
8	test_job_description	Tests that the field job_description is given proper label	Medium	JobPosting object's field label for job_description	Field label should match
9	test_jobposting_str	Test that the jobposting str() returns the expected string	Low	JobPosting object	String should match
10	test_jobposting_valid_creation	Tests that a JobPosting object is created with valid field inputs	High	Valid inputs for creating a JobPosting object	JobPosting object should be created
11	Test_jobposting_invalid_creation	Tests that you cannot create a JobPosting object with invalid field inputs	High	Invalid inputs for creating a JobPosting object	JobPosting object shouldn't be created

Requirement Model

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
12	test_requirement_detail	Test that the field requirement_detail is given the proper label	Medium	Requirement object's field label for requirement_detail	Field label should match
13	test_requirement_type	Test that the field requirement_type is	Medium	Requirement object's field label	Field label should match

		given the proper label		for requirement_type	
14	test_requirement_keyword	Test that the field requirement_keyword is given the proper label	Medium	Requirement object's field label for requirement_keyword	Field label should match
15	test_requirement_str	Test that the requirement str() returns the expected string	Low	Requirement Object	String should match

UserApplication Model

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
16	test_first_name	Test that the field first_name is given the proper label	Medium	UserApplication object's field label for first_name	Field label should match
17	test_last_name	Test that the field last_name is given the proper label	Medium	UserApplication object's field label for last_name	Field label should match
18	test_email	Test that the field email is given the proper label	Medium	UserApplication object's field label for email	Field label should match
19	test_phone_number	Test that the field phone_number is given the proper label	Medium	UserApplication object's field label for phone_number	Field label should match
20	test_education	Test that the field education is given the proper label	Medium	UserApplication object's field label for education	Field label should match
21	test_work_experience	Test that the field work_experience is	Medium	UserApplication object's field label	Field label should match

		given the proper label		for work_experience	
22	test_skills	Test that the field skills is given the proper label	Medium	UserApplication object’s field label for skills	Field label should match
23	test_satisfaction_level	Test that the field satisfaction_level is given the proper label	Medium	UserApplication object’s field label for satisfaction_level	Field label should match
24	test_number_of_projects	Test that the field number_of_projects is given the proper label	Medium	UserApplication object’s field label for number_of_projects	Field label should match
25	test_average_salary	Test that the field average_salary is given the proper label	Medium	UserApplication object’s field label for average_salary	Field label should match
26	test_work_accident	Test that the field work_accident is given the proper label	Medium	UserApplication object’s field label for work_accident	Field label should match
27	test_promotion_in_last_5_years	Test that the field promotion_in_last_5_years is given the proper label	Medium	UserApplication object’s field label for promotion_in_last_5_years	Field label should match
28	test_performance	Test that the field performance is given the proper label	Medium	UserApplication object’s field label for performance	Field label should match
29	test_match_ratio	Test that the field match_ratio is given the proper label	Medium	UserApplication object’s field label for match_ratio	Field label should match
30	test_userapplication_str	Test that the userapplication str() returns the expected string	Low	UserApplication Object	String should match

MatchedRequirement Model

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
31	test_match	Test that the field match is given the proper label	Medium	MatchedRequirement object's field label for match	Field label should match

CVUpload Model

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
32	test_file_field	Test that the field file is given the proper label	Medium	CVUpload object's field label for first_name	Field label should match
33	test_education_section	Test that the field education_section is given the proper label	Medium	CVUpload object's field label for education_section	Field label should match
34	test_work_experience_section	Test that the field work_experience_section is given the proper label	Medium	CVUpload object's field label for work_experience_section	Field label should match
35	test_cvupload_str	Test that the CVUpload str() returns the expected string	Low	CVUpload Object	String should match

Forms

ApplicantForm

Test ID	Test Name	Description	Criticality	Inputs	Expected Result

36	test_form_with_valid_number_without_plus	Test that the form can be filled out with a phone number variation that doesn’t begin with a ‘+’	High	Form data with valid phone number format that doesn’t begin with a ‘+’	Form inputs should be valid
37	test_form_with_valid_number_with_plus	Test that the form can be filled out with a phone number variation that begins with a ‘+’	High	Form data with valid phone number format that begins with a ‘+’	Form inputs should be valid
38	test_form_with_invalid_number	Test that the form can’t be filled out with a invalid phone number	High	Form data with an invalid phone number format	Form inputs should be invalid

Integration Tests

Views in Django

The views in my django application are responsible for calling all component functions. Models, forms and any external library or framework is called inside a view function. Therefore, carrying out unit tests on these views will test all the components and their corresponding functions, integrated together. Therefore, they can be regarded as integration tests.

Tests

Test ID	Test Name	Description	Criticality	Inputs	Expected Result
39	test_index_view	Tests the index view for a successful response	High	Request from a mocked client	Should return HTTP response code 200
40	test_register_view	Tests the register view for a successful response	High	Request from a mocked client	Should return HTTP response code 200
41	test_login_page_view	Tests the login page view for a successful	High	Request from a mocked client	Should return HTTP response code 200

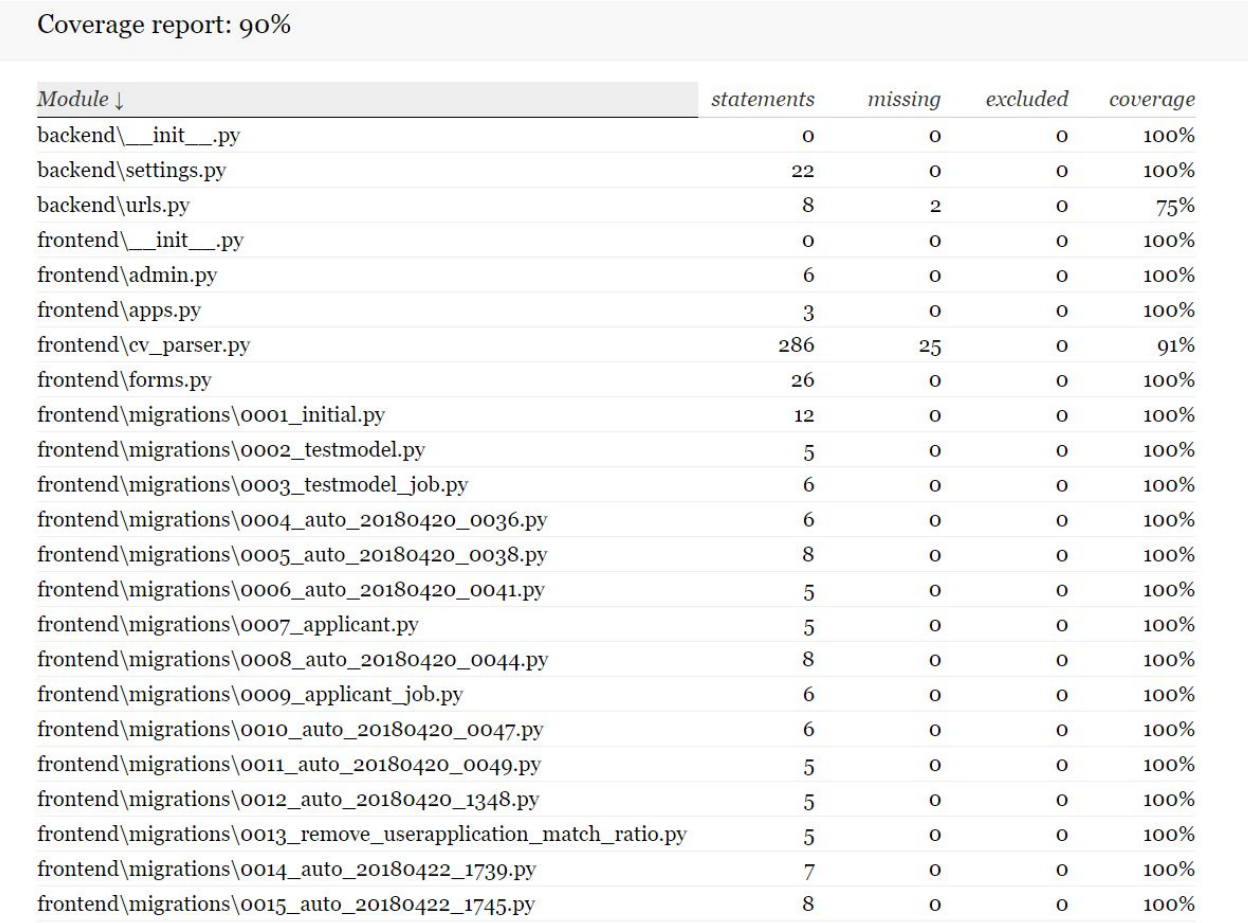
		response			
42	test_logout_view	Tests the logout view for a successful response	High	Request from a mocked client	Should return HTTP response code 302
43	test_job_board_view	Tests the job board view for a successful response	High	Request from a mocked client	Should return HTTP response code 302
44	test_job_board_view_query	Tests the job board view with a search query for a successful response	Medium	Request from a mocked client, along with two queries for job searches	Should return HTTP response code 200 for both queries
45	test_add_job	Tests the add job view for a successful response when a user is logged on and redirect response when a user isn’t	High	Request from a mocked client and user login	Should return HTTP response code 200 when user logged in and a 302 response code when not logged in
46	test_add_job_with_post	Tests the add job view with form data to post a job	High	Request from a mocked client, user login and input data for add job form in view	Should return HTTP response code 302 and form data should be valid
47	test_cv_format	Tests the cv format view for a successful response	High	Request from a mocked client	Should return HTTP response code 200
48	test_data_report_with_redirect	Tests that the data report view is restricted to users who aren’t logged in	Medium	Request from a mocked client	Should return HTTP response code 302
49	test_data_report_with_access	Tests that the data report view is accessible for users who are logged in	Medium	Request from a mocked client	Should return HTTP response code 200
50	test_previous_posts	Tests the previous post view can be accessed by a	Medium	Request from a mocked client and user login	Should return HTTP response code 200

		logged on user			
51	test_previous_posts_with_redirect	Tests the previous post view is restricted to users who aren't logged on	Medium	Request from a mocked client and user login	Should return HTTP response code 302
52	test_add_job_with_previous_posts	Tests the previous post view can be accessed by a logged on user	Medium	Request from a mocked client and user login	Should return HTTP response code 302
53	test_user_dashboard_redirect_if_not_logged_in	Tests user dashboard can't be accessed to users who aren't logged on	High	Request from a mocked client	Should return HTTP response code 302
54	test_login_with_valid_data	Tests that an existing user can log in	High	Request for a mocked client and user login data	User status should be active
55	test_login_with_invalid_data	Tests that a non existing user can't login	High	Request from a mocked client and user login data	User status should not be active
56	test_registration	Tests that a user can register	High	Request from a mocked client and registration data	Should return HTTP response code 302 and registration data valid
57	test_registration_with_invalid_data	Tests that a user can't register with invalid data	High	Request from a mocked client and registration data	Should return error
58	test_job_info	Tests job info view	High	Request from a mocked client	Should return HTTP response code 200
59	test_job_info_with_logged_in_user	Tests job info with logged on user	High	Request from a mocked client and user login	Should return HTTP response code 200
60	test_cv_upload_view	Tests cv upload view	High	Request from a mocked client	Should return HTTP response code 200
61	test_cv_upload_with_valid_data	Test uploading a valid cv through the cv upload view	High	Request from a mocked client and properly formatted cv	Should return HTTP response code 302 and CV form data should be valid

62	test_cv_upload_with_invalid_data1	Test uploading an invalid cv through the cv upload view	High	Request from a mocked client and improperly formatted cv	Should return HTTP response code 200 and CV form data should be invalid
63	test_cv_upload_with_invalid_data2	Test uploading an invalid cv through the cv upload view	High	Request from a mocked client and improperly formatted cv	Should return HTTP response code 200 and CV form data should be invalid
64	test_applicant_form_view	Tests applicant form view	High	Request from a mocked client	Should return HTTP response code 200
65	test_applicant_form_view_with_valid_data	Tests applicant view and posting valid data to form	High	Request from a mocked client and valid applicant form data	Should return HTTP response code 302 and applicant form data should be valid
66	test_applicant_form_view_with_invalid_data	Tests applicant view and posting invalid data to form	High	Request from a mocked client and invalid applicant form data	Should return HTTP response code 302 and applicant form data should be invalid
67	test_applicant_form_view_with_existing_applicant	Tests applicant view and posting data of a user who has already applied for the job in question	Medium	Request from a mocked client and existing applicant form data	Should return HTTP response code 302 and applicant form data should be invalid
68	test_application_form_view	Tests application view and valid application data	High	Request from a mocked client and valid application form data	Should return HTTP response code 302 and application form data should be valid
69	test_applicant_list_view_with_redirect	Tests that applicant list view is restricted to users who aren't logged in	High	Request from a mocked client	Should return HTTP response code 302
70	test_applicant_list_view_with_login	Tests that applicant list view is not restricted to users who are logged in	High	Request from a mocked client and user login	Should return HTTP response code 200 and user status should be active

71	test_update_job_view	Tests update job view with user logged in	High	Request from a mocked client and user login	Should return HTTP response code 200 and user status should be active
72	test_update_job_form	Tests the update job form while an applicant is logged on	High	Request from a mocked client, user login and valid updata job form data	Should return HTTP response code 200, user status should be active and form data should be valid
73	test_applicant_info_view	Tests that applicant info view is not restricted to users who are logged in	High	Request from a mocked client and user login	Should return HTTP response code 200 and user status should be active
74	test_delete_job_view	Tests that delete job view is not restricted to users who are logged in	High	Request from a mocked client and user login	Should return HTTP response code 200 and user status should be active

Coverage Report



Coverage report: 90%

Module ↓	statements	missing	excluded	coverage
backend__init__.py	0	0	0	100%
backend\settings.py	22	0	0	100%
backend\urls.py	8	2	0	75%
frontend__init__.py	0	0	0	100%
frontend\admin.py	6	0	0	100%
frontend\apps.py	3	0	0	100%
frontend\cv_parser.py	286	25	0	91%
frontend\forms.py	26	0	0	100%
frontend\migrations\0001_initial.py	12	0	0	100%
frontend\migrations\0002_testmodel.py	5	0	0	100%
frontend\migrations\0003_testmodel_job.py	6	0	0	100%
frontend\migrations\0004_auto_20180420_0036.py	6	0	0	100%
frontend\migrations\0005_auto_20180420_0038.py	8	0	0	100%
frontend\migrations\0006_auto_20180420_0041.py	5	0	0	100%
frontend\migrations\0007_applicant.py	5	0	0	100%
frontend\migrations\0008_auto_20180420_0044.py	8	0	0	100%
frontend\migrations\0009_applicant_job.py	6	0	0	100%
frontend\migrations\0010_auto_20180420_0047.py	6	0	0	100%
frontend\migrations\0011_auto_20180420_0049.py	5	0	0	100%
frontend\migrations\0012_auto_20180420_1348.py	5	0	0	100%
frontend\migrations\0013_remove_userapplication_match_ratio.py	5	0	0	100%
frontend\migrations\0014_auto_20180422_1739.py	7	0	0	100%
frontend\migrations\0015_auto_20180422_1745.py	8	0	0	100%

In total, my unit and integration tests cover 90% of my application code. The coverage of the application's individual main components are:

- **CV Parser:** 91%
- **Forms.py:** 100%
- **Models.py:** 100%
- **Random Forest Classifier:** 80%
- **Views.py:** 74%

End-to-End Tests

I used the Sikuli automation framework to conduct end-to-end tests on my application. The goal of these tests were to test the flow of tasks in my application. I wanted to construct test cases that would execute as much user tasks as possible and carry out these tasks in different orders and variations to test all possible flow of user actions. Anything that was created during the execution of these scripts is deleted once the test is finished. These scripts were ran several times a day and after there was any major change regarding the application’s functionality or a UI change.

Test Cases

Test Case 1: User creation and job posting

Steps (flow of user tasks):

1. Register a new user in the application
2. Log on with this newly created user
3. Create a job posting
4. Delete the job
5. Delete User

Functionality tested:

- User Registration
- User login
- Job creation
- Job Deletion
- User Deletion

Test Case 2: Apply for a job then view applicants

Steps (flow of user tasks):

1. Search for job using the search bar
2. Apply for a job
3. Login as job poster
4. View applicant list
5. View applicant summary
6. Delete applicant
7. Logout

Functionality tested:

- Job search queries
- Applying for a job (which tests cv parser, machine learning and form validation)
- User login
- Statistics shown in applicant list
- Applicant summaries

- Applicant deletion
- User logout

Test case 3: Apply for job with existing applicant and view applicant

Steps (flow of user tasks):

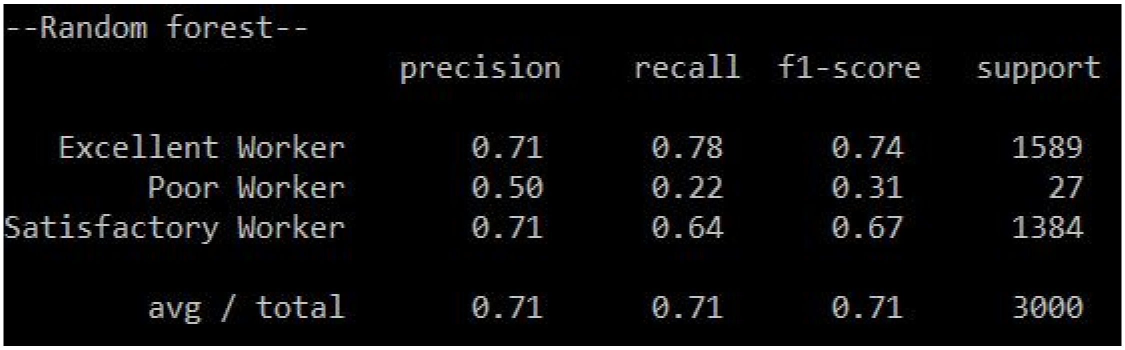
1. Search for job using the search bar
2. Apply for job with CV of applicant who has already applied for this job
3. Login as job poster
4. View existing applicant
5. Logout

Functionality Tested

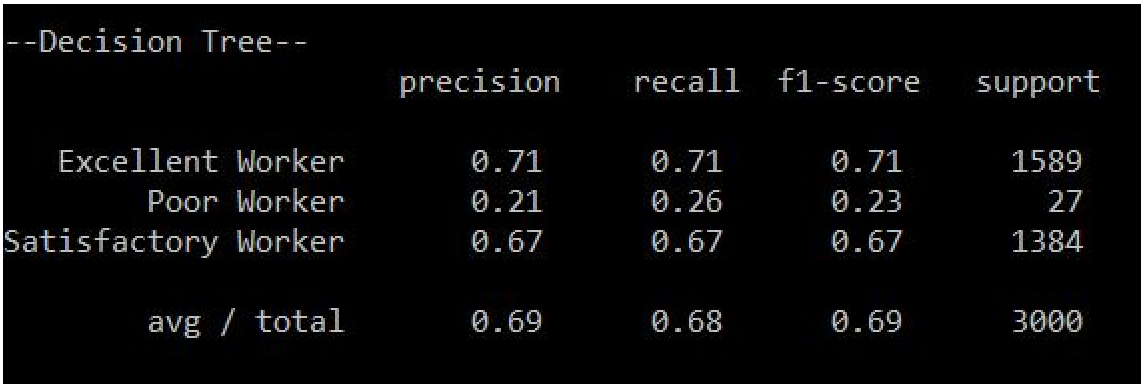
- Job search queries
- Applying for a job with rejection due to applicant attempting to apply twice
- User login
- Statistics shown in applicant list
- Applicant summaries
- User logout

Machine Learning algorithm testing

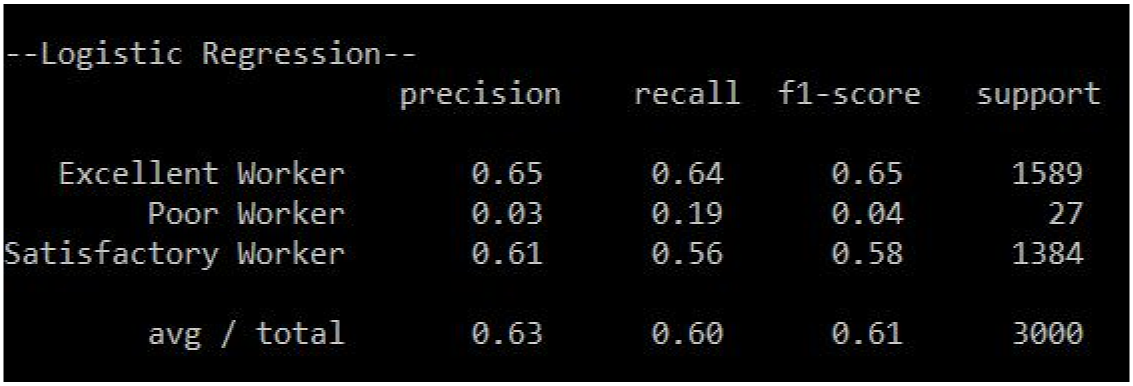
When designing my machine learning algorithm, i had to decide on what classifier to use. I experimented with a number of models and used Scikit-learn's classification report functionality to test the models precision and accuracy. I also had to tweak parameters, such as the criterion for attribute splits, and see how this affected the performance of the classifier.



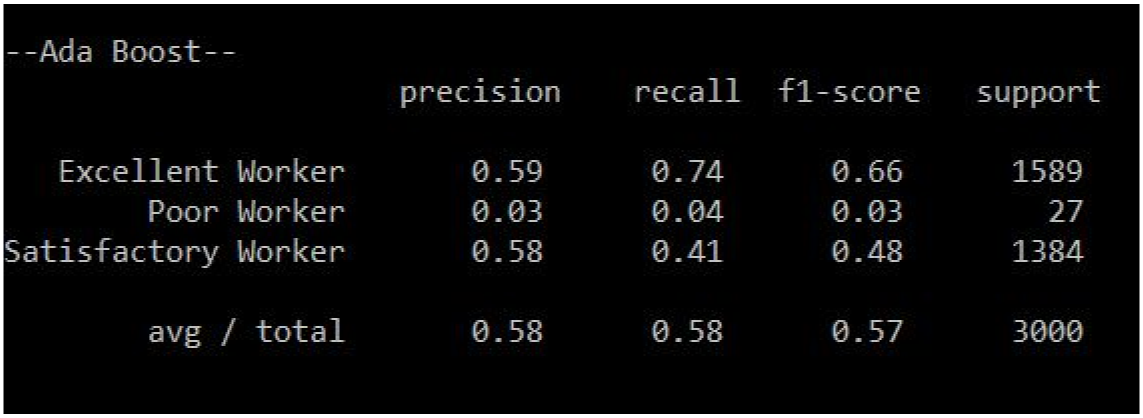
```
--Random forest--
                     precision    recall  f1-score   support

   Excellent Worker       0.71      0.78      0.74      1589
        Poor Worker       0.50      0.22      0.31        27
Satisfactory Worker       0.71      0.64      0.67      1384

        avg / total       0.71      0.71      0.71      3000
```



```
--Decision Tree--
                     precision    recall  f1-score   support

   Excellent Worker       0.71      0.71      0.71      1589
        Poor Worker       0.21      0.26      0.23        27
Satisfactory Worker       0.67      0.67      0.67      1384

        avg / total       0.69      0.68      0.69      3000
```



```
--Logistic Regression--
                     precision    recall  f1-score   support

   Excellent Worker       0.65      0.64      0.65      1589
        Poor Worker       0.03      0.19      0.04        27
Satisfactory Worker       0.61      0.56      0.58      1384

        avg / total       0.63      0.60      0.61      3000
```



```
--Ada Boost--
                     precision    recall  f1-score   support

   Excellent Worker       0.59      0.74      0.66      1589
        Poor Worker       0.03      0.04      0.03        27
Satisfactory Worker       0.58      0.41      0.48      1384

        avg / total       0.58      0.58      0.57      3000
```

Based off these results, I decided to go with a random forest classifier. One major issue I noticed was the low number of employees labelled a “poor worker”. However, I couldn’t tweak class labels to improve this and did not want to compromise prediction accuracy. I then proceeded to carry out test cases for predictions. These tests involved changing different attributes inputs together and recording the result. I wanted to test the effect of individual parameters, so I gave each parameter a standard value and then enhanced each parameter for each test case. The standard values for each attribute are:

- **Satisfaction Level:** 6
- **Average Monthly Hours:** 156
- **Time spent at company:** 2
- **Work Accident:** No
- **Promotion in the last 5 years:** No
- **Left:** Yes
- **Salary:** Medium
- **Number of projects:** 4

I did a train and test split of 80% (training data) to 20% (testing data).

Tests

Test ID	Inputs	Result
75	Applicant with standard attributes but with high satisfaction level	Satisfactory Worker
76	Applicant with standard attributes but with low satisfaction level	Satisfactory Worker
77	Applicant with standard attributes but with high average monthly hours	Excellent Worker
78	Applicant with standard attributes but with low average monthly hours	Satisfactory Worker
79	Applicant with standard attributes but with high time spent at the company	Satisfactory Worker
80	Applicant with standard attributes but with low time spent at the company	Satisfactory Worker
81	Applicant with standard attributes and no promotion in	Satisfactory Worker

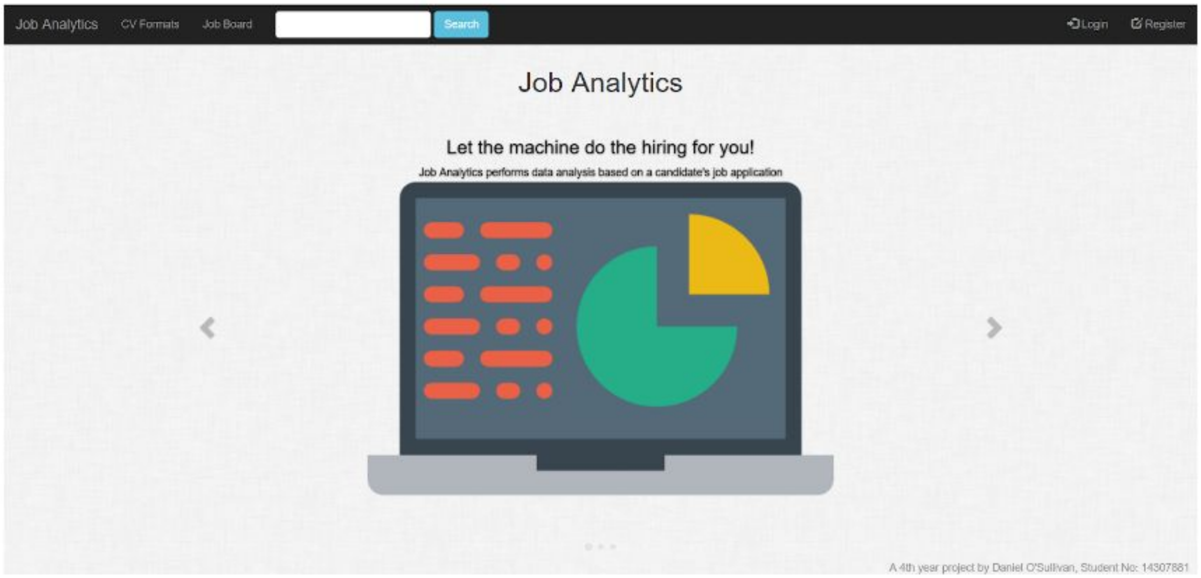
	the last 5 years	
82	Applicant with standard attributes and a promotion in the last 5 years	Satisfactory Worker
83	Applicant with standard attributes and had no work accident	Satisfactory Worker
84	Applicant with standard attributes and had a work accident	Satisfactory Worker
85	Applicant with standard attributes and a low salary	Satisfactory Worker
86	Applicant with standard attributes and a medium salary	Excellent Worker
87	Applicant with standard attributes and high salary	Satisfactory Worker
88	Applicant with standard attributes and a high number of projects worked on	Excellent Worker
89	Applicant with standard attributes and a low number of projects worked on	Excellent Worker

User Testing

User Interface Questionnaire

I made a questionnaires regarding the design of the application's user interface. I posted it on to Facebook and asked for people's opinions on the design and how it looked. In the questionnaire, users were asked to observe the following images and then answer questions about the user interface.

Homepage



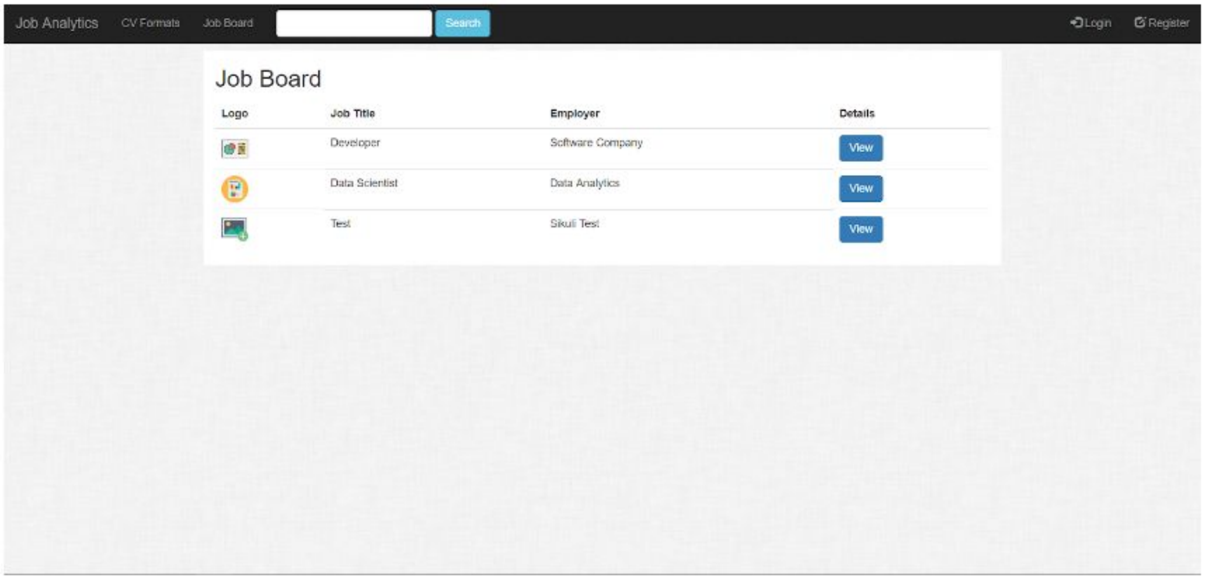
Job Analytics

Let the machine do the hiring for you!

Job Analytics performs data analysis based on a candidate's job application

A 4th year project by Daniel O'Sullivan, Student No: 14307881

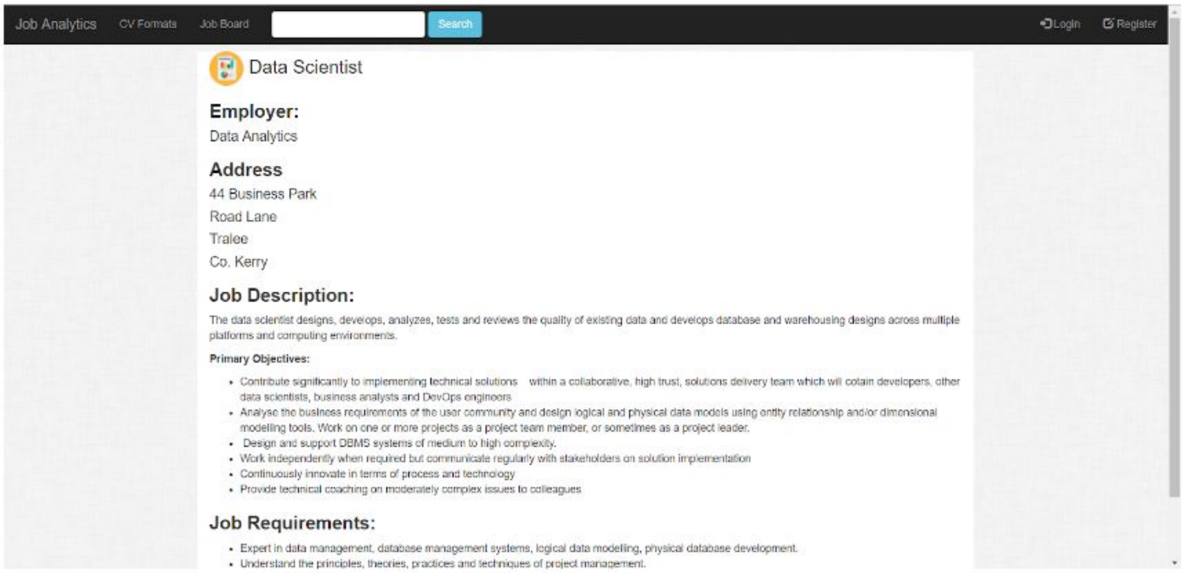
Job Board



Job Board

Logo	Job Title	Employer	Details
	Developer	Software Company	View
	Data Scientist	Data Analytics	View
	Test	Sikuli Test	View

Sample of a job information page



Data Scientist

Employer:

Data Analytics

Address

44 Business Park
Road Lane
Tralee
Co. Kerry

Job Description:

The data scientist designs, develops, analyzes, tests and reviews the quality of existing data and develops database and warehousing designs across multiple platforms and computing environments.

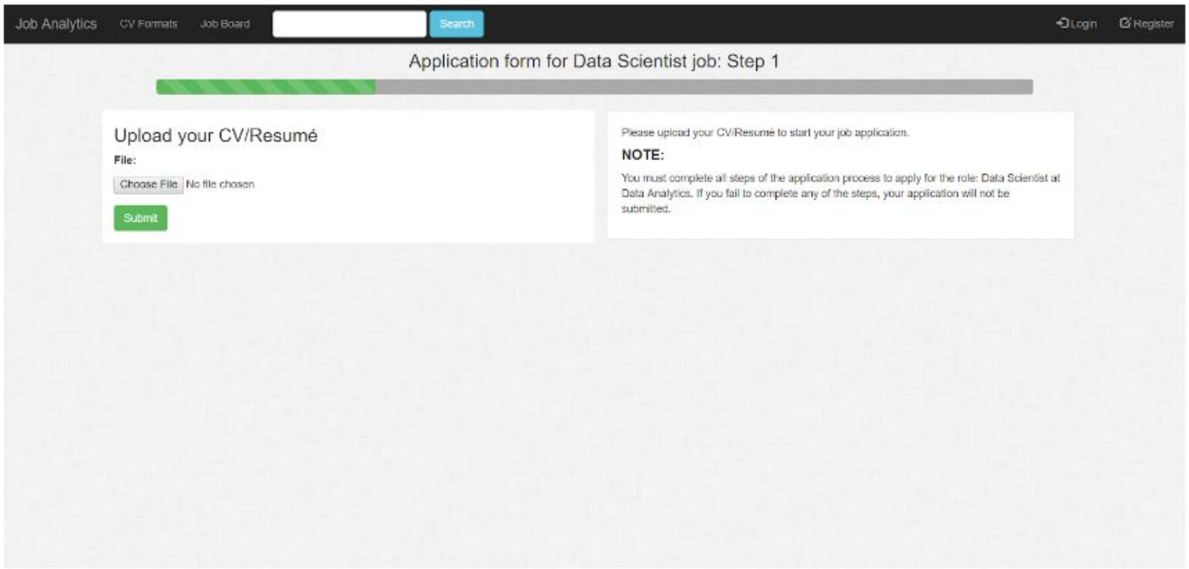
Primary Objectives:

- Contribute significantly to implementing technical solutions within a collaborative, high trust, solutions delivery team which will cotain developers, other data scientists, business analysts and DevOps engineers
- Analyse the business requirements of the user community and design logical and physical data models using entity relationship and/or dimensional modelling tools. Work on one or more projects as a project team member, or sometimes as a project leader.
- Design and support DBMS systems of medium to high complexity.
- Work independently when required but communicate regularly with stakeholders on solution implementation
- Continuously innovate in terms of process and technology
- Provide technical coaching on moderately complex issues to colleagues

Job Requirements:

- Expert in data management, database management systems, logical data modelling, physical database development.
- Understand the principles, theories, practices and techniques of project management.

Curriculum Vitae Upload Page



Application form for Data Scientist job: Step 1

Upload your CV/Resumé

File:

Choose File No file chosen

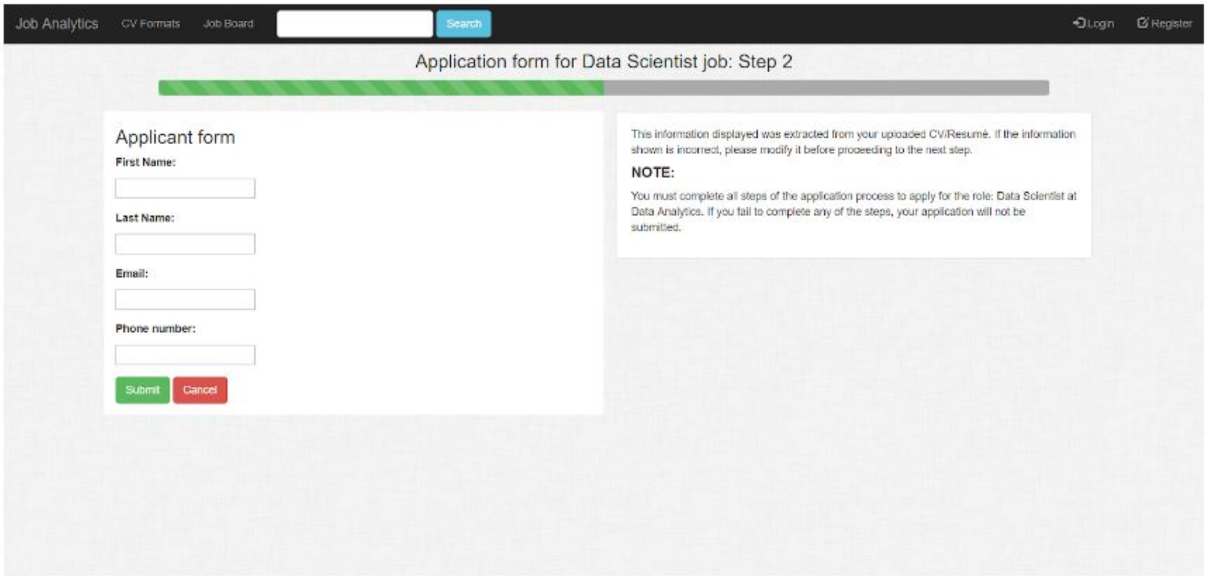
Submit

Please upload your CV/Resume to start your job application.

NOTE:

You must complete all steps of the application process to apply for the role: Data Scientist at Data Analytics. If you fail to complete any of the steps, your application will not be submitted.

Applicant information form



Application form for Data Scientist job: Step 2

Applicant form

First Name:

Last Name:

Email:

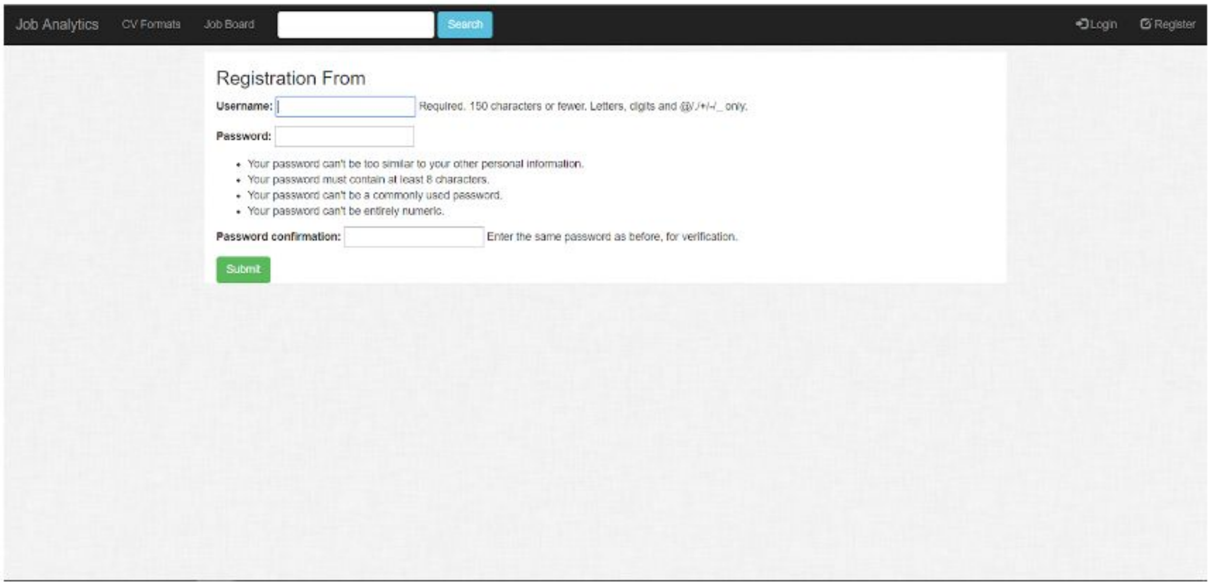
Phone number:

This information displayed was extracted from your uploaded CV/Resumé. If the information shown is incorrect, please modify it before proceeding to the next step.

NOTE:

You must complete all steps of the application process to apply for the role: Data Scientist at Data Analytics. If you fail to complete any of the steps, your application will not be submitted.

Registration form



Registration From

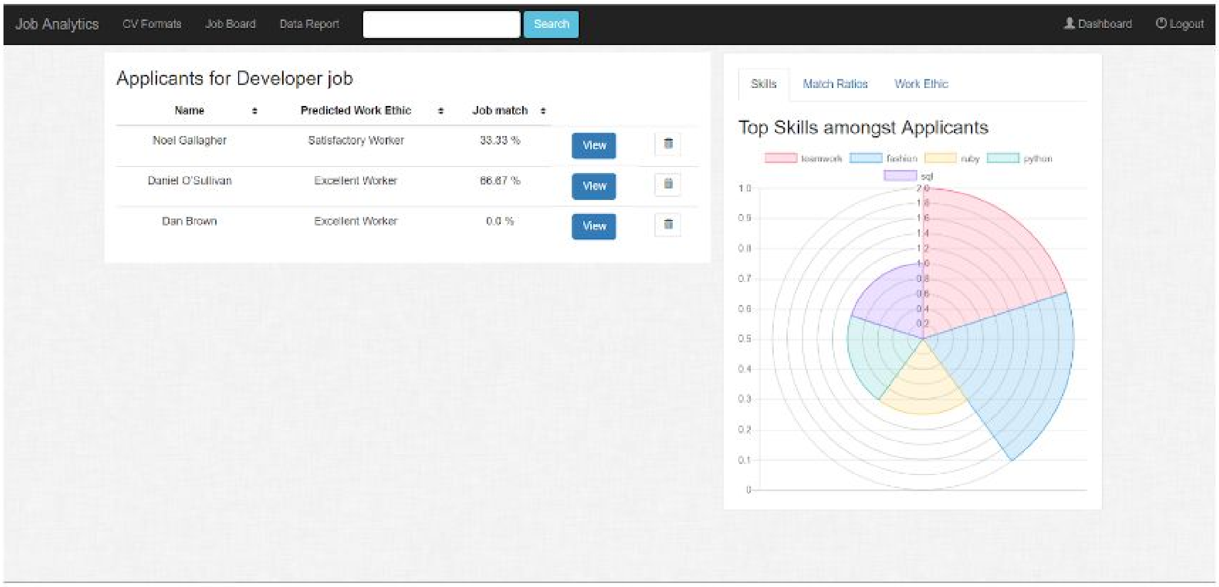
Username: Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Password:

- Your password can't be too similar to your other personal information.
- Your password must contain at least 8 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

Password confirmation: Enter the same password as before, for verification.

Sample of a user dashboard page



Applicants for Developer job

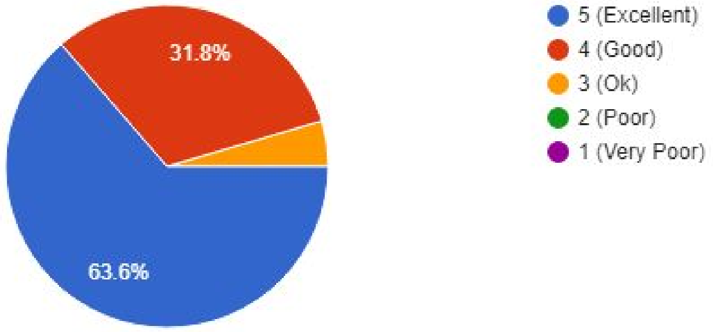
Name	Predicted Work Ethic	Job match
Noel Gallagher	Satisfactory Worker	33.33 %
Daniel O'Sullivan	Excellent Worker	66.67 %
Dan Brown	Excellent Worker	0.0 %

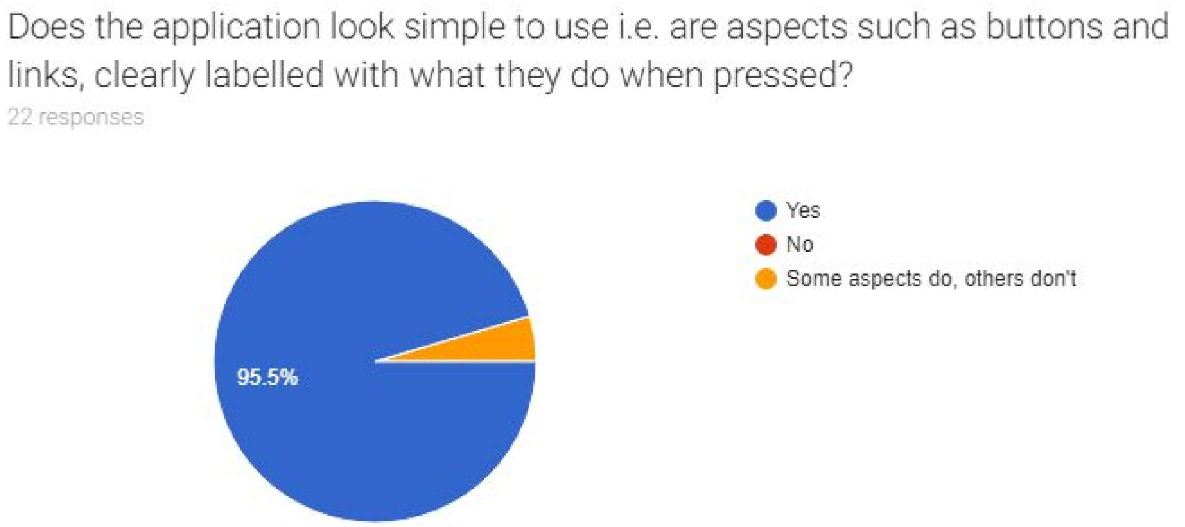
Top Skills amongst Applicants

These are the results I got back.

How would you rate the user interface of the application i.e. how does the application look? (Scale of 1 - 5)

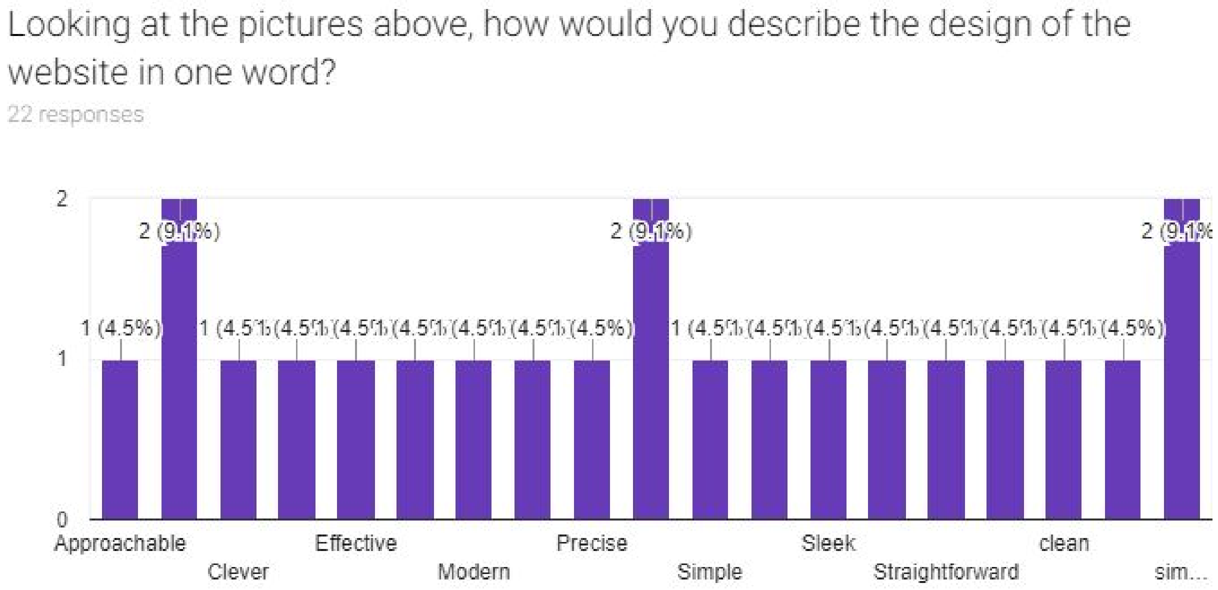
22 responses





Does the application look simple to use i.e. are aspects such as buttons and links, clearly labelled with what they do when pressed?

22 responses



Looking at the pictures above, how would you describe the design of the website in one word?

22 responses

Top 3 words used were:

- Clean
- Professional
- SImple

Are there any improvements you would suggest?

Utilise more screen space. With bigger buttons and text. I’m quite elderly and have poor sight.
More colour
Looks really good! Very simplistic but effective design! Could you include a my profile page if users crest accounts? It could be synced with LinkedIn.
None
Maybe try fill some pages ?
If I understand the final image correctly, maybe add an option so applicants can't see the scores of other applicants if they would prefer not to. Maybe devise a page that lists all of the individual's pending applicantions and scores too.
Brighter navbar
More graphical job info, cv upload etc
Synergise
i think it looks perfect to me nothing really i would change
Some pages are very sparse, and others text heavy. Distribute data more evenly through out pages
None, smooth clean and easy to use
Great App!

The overall feedback was that the application looks really well designed and has a professional look to it. The main concern people had was that some content on some pages looked too distributed, while some in contrast looked too condensed.

Employer and applicant user testing

I conducted anonymous user testing. I got 4 users who cover different aspects of my user demographic:

2 people who work in recruitment roles:

- One person works for a software development company and is familiar with using technology including applications similar to Job Analytics. We’ll call this person employer1.
- One person works for a van courier company and would not be very familiar with using recruitment technology. We’ll call this person employer2.

2 recent college graduates:

- One person who has recently graduated from a computer science course. We'll call this user applicant1.
- One person who has recently graduated from a political based college course. We'll call this person applicant2.

The thought process behind getting these types of users was that I have 2 users (one employer and one applicant) who would be quite familiar with using technologies such as a web application. I would also have 2 users (one employer and one applicant) who wouldn't be familiar with using such technologies. I assigned each set of users a set of tasks and asked them to answer questions after they have completed them

Employer Tasks

Creating a user

Question	Employer1	Employer2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	5	5	Both users stated that they found that the task was relatively simple to do
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	5	Both users stated that instructions were clear

Logging on with their newly created user

Question	Employer1	Employer2	Comments

How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	5	4	Both users stated that they found that the task was relatively simple to do, but employer2 was confused as to why you had to login after you registered. He/She assumed they would be logged on automatically after registration.
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	5	Both users stated that instructions for logging on were clear.

Posting a job

Question	Employer1	Employer2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	3	2	Both users stated that they found that the task more difficult than it should have been. Employer1 expressed their view that the requirements should not be constrained to a certain format.
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	3	3	Both users stated that instructions were a little vague and somewhat difficult to follow.

Viewing applicant statistics and summaries

Question	Employer1	Employer2	Comments

How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	4	4	Both users stated that they found that the task simple but both expressed where improvements could be made e.g. better labelling of graphs.
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	4	Employer1 stated the instructions were simple to follow while employer2 said the only problem they had was when observing an applicant’s CV. They didn’t see the tab menu on top for ”Formatted CV” and “Raw CV”. Said that they should be made more clear to see.

Deleting a job post

Question	Employer1	Employer2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	5	5	Both users stated that they found that the task was relatively simple to do
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	5	Both users stated that instructions were clear

Deleting an applicant

Question	Employer1	Employer2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	5	5	Both users stated that they found that the task was relatively simple to do

How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	5	Both users stated that instructions were clear

Updating a job post

Question	Employer1	Employer2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	3	3	Both users stated that their previous concerns with the job posting functionality. Employer2 gave a slightly better score than previously as they were more familiar with how to do it after doing it the first time.
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	3	3	Both users stated their previous comments in regards to the job posting instructions.

Applicant Tasks

Search for a job using search bar

Question	Applicant1	Applicant2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	4	5	Both users stated that they carried out the tasks with ease. Applicant1 stated their view that you should be able to filter for jobs by more than just the job title.
How clear were the	3	5	Applicant1 stated that there

instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).			were no instructions given on the application but said the task was self explanatory. Stated that someone might not know how to do it without proper instructions.

Applying for a job

Question	Applicant1	Applicant2	Comments
How easy did you find the task on a scale of 1 - 5 (with 5 being really easy one being very difficult).	4	3	Applicant1 stated the task was easy but said that they felt the last step of the application process was unnecessary. Applicant 2 was confused as to why their CV has to be in a specific format.
How clear were the instructions on the application in regards to this task, on a scale of 1 -5 (with 5 being really easy one being very difficult).	5	3	Despite Applicant1's comments, they stated the instructions were very clear. Applicant2 stated the instructions were clear but didn't give reasoning to why they were there.

The overall feedback was that the majority of tasks were simple to execute. The big concern was the job posting functionality for employers, while applicants were concerned with (not as concerned as employers were about job posting) some of the aspects of the job application process.