Project Scope

CPSC 594 Fall 2018

Software Engineering Project

HireGround

Team 5

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Scope Statement and Introduction

In this document we will discuss the scope of our project with HireGround Software Solutions. HireGround is a software company that provides clients with “innovative, flexible, customer service-focused HR software that will lead their hiring and retention to a higher ground” (HireGround, 2018). They utilize cloud technology and deep-learning algorithms to automate the tedious side of HR. The goal is to allow employers and recruiters to efficiently browse potentially qualified applicants while filtering out the unqualified applicants. Our task with them is to improve on their currently implemented system and we have been given a set of metrics to which we can measure our success by which is mentioned in our Objectives.

Objectives

After the first rounds of discussion with HireGround, we have been able to pinpoint three major objectives for the project.

Our primary objective is to modify the algorithm that is implemented in perl to communicate with the PDB, since the algorithm was originally designed to work only with the MongoDB.

We are also required to configure the deep-learning algorithm that was developed by the University of Alberta (UofA) to better fit our needs. The algorithm by UofA was designed for entire resumes. HireGround has requested that we segment the resume to be processed separately in their different sections; work experience, education, skills, etc.

Furthermore, HireGround has also given us the requirements to improve the algorithm so that the accuracy of their system increases from 60% to upwards of 80%. The accuracy of the system in this context is determined by the rate at which a qualified applicant is given an appropriately qualified score whereas an unqualified applicant is given the appropriate score. Finally, we need to ensure the system displays the information accurately in a visually appealing manner to the users.

Constraints

Our main constraints are ensuring privacy, security and integrity of the resumes since they contain a lot of private information about individuals. We may also be limited in our access to the databases and some proprietary code due to confidentiality reasons.

Our second constraint is time. As we are all full-time students, the amount of time that we have to dedicate to the project is limited. Although we are willing work hard, the fact that we do not have as much time as full-time workers needs to be factored in the schedule. The project will involve modifying an algorithm that uses deep-learning neural networks. Our final constraint is our lack of knowledge and experience in the domain, there will be a steep learning curve and most likely extra testing required.

Assumptions

First, we assume that HireGround will dictate the privacy/security policy. We assume that they already have a policy in place for their current system and that they will be managing it for this project as well since we are simply improving upon an existing system.

Second, HireGround will be responsible to grant us access to everything we need in regards to cost and data, including paying any licencing fees that might be needed.

One of our main tasks is to output the data visually to the clients. HireGround's Applicant Tracking System(ATP) is available on mobile platforms. We assume that we do not have to make any special accommodations for the mobile versions of the application. This is because our visualized output will be added on to an already existing element and will not change the fundamental structure of the UI.

Last but not the least, we are also assuming HireGround will provide us with the designs required for the web interface.

Project Structure

As a team, all team members are expected to work together in order to modify the JSON generated by Postgres DB to be identical to the JSON generated by MongoDB. After the initial task is complete, we will work in parallel with teams of two.

Under this proposed team structure, each pair will be assigned to a different part of the project as the tasks can be worked on simultaneously. One group will focus on configuring and improving the deep-learning algorithm developed by UofA and the other will focus on training the model to accept certain parameters given by the client.

Overall, our goal is to focus on improving the algorithm initially. After this is achieved, the team will then be able to look into visualizing the data and other means to improve the application.

Team & Role definition

We have created a list of team and role definitions based on initial strength and interests assessment, as well as our meetings with HireGround and the course instructor.

Project Owner

The project owner is HireGround®. They are responsible for providing us with the details of their current progress and their future plans, as well as, test data.

Project Manager

Asqar from HireGround and Omar Abdelwahab will communicate with each other to fulfill the task of Project Manager. Their responsibilities include making sure the project is proceeding according to schedule as well as making sure requirements and deliverables are completed with appropriate timing and quality.

Team Leader

Kim Xie will be the Team Leader. Her responsibilities include ensuring everyone is productive and has a job to do that fits their expertise. She is also responsible for ensuring team meetings progress smoothly and being in charge of overall operations.

Team Member

Not just Ben and Paul, but also Kim and Omar will be fulfilling the role of Team Member. The role of the Team Member is flexible due to the dynamic nature of the work. The project is split up into several stages of development, with each stage being reliant on the prior stage being completed. Because of this, we will tackle each stage of development as a team and assign work based on the expertise available. Team Members will be fulfilling, primarily but not limited to, the development side of the project.

Deliverables

- All of the historical data needs to be migrated to the new Postgres DB;
- Resume will be divided into sections where each section is associated with its own parameters for what is valued and what is not, in order to produce a score based on the individual sections;
- The accuracy of the algorithm will be improved by reconfiguring the deep learning algorithm developed by the UofA. The model also needs to be trained in order to

satisfy all other specifications identified, such as the individual section requirement above;

- Output needs to be displayed on HireGround's web service in a visually appealing format to satisfy usability requirements.

Functional & Non-functional Requirements

We have identified various functional and non-functional requirements through our scope meetings with HireGround. Functional requirements specify what our product must do, whereas non-functional requirements demonstrate the properties that the product should have in order to do what it must do (Wysocki et al., 2014).

Functional Requirements

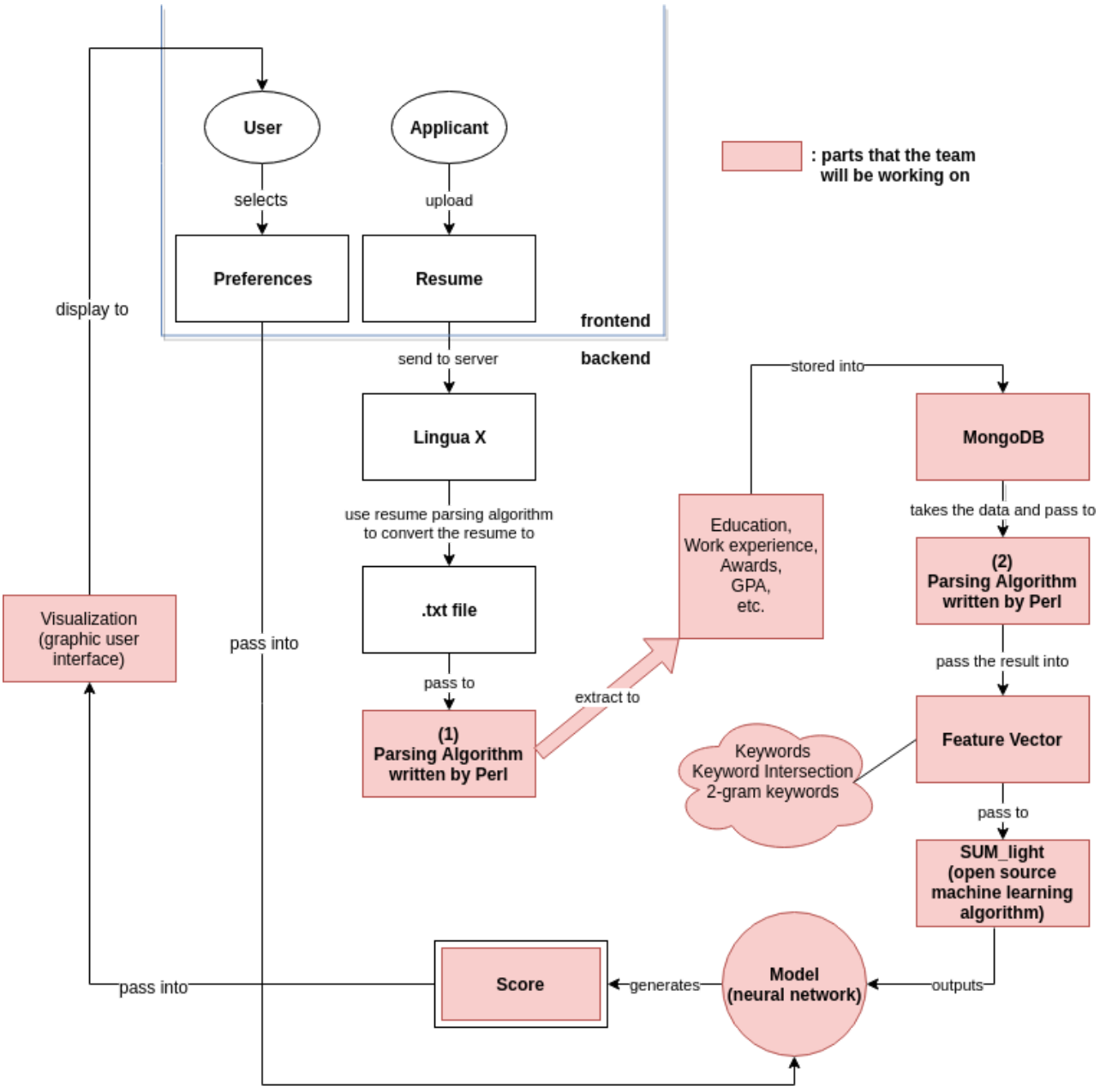
- Database to be migrated into Postgres DB format;
- Modifying the JSON file output from Postgres DB to be readable by the algorithm which is written by Python;
- Output visually displayed to Human Resources users as they browse resumes;
- Implementing changes to SUM_light algorithm to better accuracy of the output model;
- Configure the deep-learning algorithm to process the resume sections separately, giving a score for each individual section.

Non-Functional Requirements

- Output visualized in a clear and concise manner;
- Achieve 80% accuracy for the algorithm;
- Reasonable run-time.

Application Overview Diagram

We have drafted the following application overview diagram based on the information gathered from our initial meetings with HireGround.


User
Applicant
: parts that the team will be working on
selects
upload
Preferences
Resume
display to
frontend
backend
send to server
Lingua X
use resume parsing algorithm to convert the resume to
.txt file
pass to
(1) Parsing Algorithm written by Perl
extract to
Education, Work experience, Awards, GPA, etc.
stored into
MongoDB
takes the data and pass to
(2) Parsing Algorithm written by Perl
pass the result into
Feature Vector
Keywords
Keyword Intersection
2-gram keywords
pass to
SUM_light (open source machine learning algorithm)
Visualization (graphic user interface)
pass into
pass into
Score
generates
Model (neural network)
outputs

References

1. HireGround Software (2018). Retrieved from http://hiregroundsoftware.com/about/.
2. Wysocki, R., Kaikini, S., & Sneed, R. (2014). Effective project management : Traditional, agile, extreme (7th ed.).