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Senior Seminar I

Contractor App

Time management and organization are key traits that make a contractor reliable, fast, and trustworthy. One of the biggest preventers of these key traits is lack of preparation physically and financially, which I learned through my own experience of working alongside contractors and having to do things on my own. I noticed there were problems figuring out how long things would take to accomplish and how much to charge. The reason for this is because not every job is the same, and some jobs require more time for what looks like less work. Sometimes you’re trimming trees, or bushes, and other times you’re moving a couch down the stairs, it’s always different. This made it very difficult to synchronize customers to give them an accurate time schedule of when things would be completed and give fair pricing among all customers.

After a while you begin to understand how much things take, and how much to charge, but it takes a lot of different jobs to understand where to compare it to. Having someone with experience who can help you solve these problems also helps you to get things done quicker. This problem is what I decided to solve by using our application. The main idea behind the app is to create an AI which you can take a picture of whatever job you would like to do and give it a prompt, describing what would be done. After this, the ML algorithm would scan many data points and categorize it effectively, either a trash job, landscaping job, moving job etc. Based on these other data points, pictures, cost of job, and time spent, it would be able to distinguish how long the job would take and how much to charge according to many other people who have done similar jobs, and what prices they charged.

There is some software that aims to help contractors, specifically with scheduling and accounting, which are the only real ones out there. The most popular being Field Edge and Procore. These apps are more passive for them and help them when they need them, but our app aims to help those who are getting into the space be more competitive. It can allow anyone to understand how much time, and how much money to allocate to a certain job, and we also plan to provide a section for video uploads in certain sections that explain how to do certain things. The main app, however, would be used to schedule and account for jobs just by using a picture and the machine learning algorithm. “Procore and Field edge aim to price, estimate, and schedule jobs”(1,2). Our app will involve machine learning while these do not, making it more advantageous to use.

The app will be coded in python, which has the most readily available libraries and data frames to be able to process data for machine learning. The database will be written in MongoDB and it will use a front end in HTML and hopefully CSS. In addition Flask will be used in combination with python to be able to create a streamlined application. A website will be built first before the application is built, and the application will follow second. For our technical requirements, we believe that these languages provide us with the best flexibility when creating our project.

A majority of the coding will be front end and database linking which will involve classes to process and retrieve data within the python code. The code will have to process the person's input, similar to a chat bot, which we may just have a drop down in HTML to make this process easier. With a drop down to process the job type it will be easier to categorize the job for the machine learning algorithm. The comments box is where the input will be parsed to find any differences or special accommodations for that job which may cause the price to go up or down depending on the accommodation. For example, if a customer wants their driveway redone, but let's assume they want it made of gold and not concrete, the job would be very expensive. Comments like this are super unpredictable, which happens often on the job which means our application has to be robust to handle these types of requests. They will have to be categorized to better help the ML algorithm perform its tasks, such as Expensive, Cheap, Very expensive, etc. and a separate section for time (short, long, very long) which will help to determine the type of impact that the comment has on the request as a whole. From an output standpoint, the application will have classes to provide the user with its time and cost along with a scheduler and accounting page which the user can directly put in their output to schedule it for themselves. The idea here is to ensure that the business makes enough money and stays afloat, by ensuring optimal timelines and revenue targets which the AI can accomplish, before only by human sales and interpretation. Now with a machine that can handle some of the sales for you, there can be less hassle. The app could also be on the client side as well, allowing companies to provide free estimates without the hassle either. Clients could just go on the company website and give a picture and automatically receive an estimate. After that they can discuss whether or not they’d like to continue with it or not, which will also save these companies more time.

To conclude, our app is designed to help a contractor in all stages of their work perform better. By allowing them to be able to schedule and price jobs correctly it allows a contractor to be more prompt and efficient leading to happy customers and a more effective work environment. Using libraries in python to process inputs, as well as a machine learning algorithm, we can output relevant work information. In addition, other sections of our application and website will allow educational videos to allow people to learn skills that they may be required to do for the first time. The app can take many directions as well, including an educational route that would teach students how to do certain things and provide the time management and financial security it takes to become a successful business owner in any field. Using HTML and CSS to create a visually appealing front end capable of taking in the pictures as input and comments, with a database in MongoDB and connections in Flask, the application will be our senior project for our college Bachelors Degrees.

Bibliography

**1) FieldEdge.** "Contractor Management Software." *FieldEdge*,<https://fieldedge.com/ppc-bing-fieldedge>. Accessed 30 Mar. 2025.

**2) Procore.** "Construction Management Software." *Procore*, <https://www.procore.com/sem/construction-software>. Accessed 30 Mar. 2025.