SE 491 BIWEEKLY REPORT 5

sdmay20-25: Consumer Aware Warehouse Management

3/12/20 – 4/2/20

Team Member	Roles
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Lindsey Sleeth lssleeth@iastate.edu	Meeting Scribe Project Manager Software Developer
Sam Stifter stifter@iastate.edu	Test Engineer Software Architect Software Developer
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Elijah Buscho elijah@iastate.edu	Test Engineer Software Dev Proj Manager
Devin Üner druner@iastate.edu	Software Architect Machine Learning Specialist

Bi-Weekly Summary

Objective

Frontend
- Display distributor information in distributor cards
- Dynamically generate distributor products for each distributor card
- Finalize connections with endpoints and display data -- meaning we will only have to substitute the URL with the algorithm data

Backend
- Create Endpoints to facilitate storing prediction data
- Create new Database tables to store prediction data
- Create Endpoints for retrieving the prediction data

Prediction Algorithm
- Integration of Algorithm with Database
- Testing Algorithm

Accomplishments

This week the frontend team completed the distributor product cards to dynamically generate and dynamically generate all of the items associated with the distributor. The backend team successfully completed the backend. This week specifically, the backend team modified the database to be able to store predictions. An endpoint was created to view these prediction tables.

Summary of Weekly Advisor Meeting

In the weekly advisor meeting, our team discussed wrapping up the project by completing the backend endpoints and getting everything finalized in connecting the components for the frontend and the backend. We still have one more iteration we can continue finalizing things, but the goal is to have everything done and to begin working on the final presentation. If there is time after all of the components are wired up, we may go back in and add a few more simple features or flesh out a plan for how this project could continue to be extended.

The original plan was to look into a couple of more algorithms and compare predictions, however, the scope has been cut down a bit with our Advisor and Client due to all of the current events.

Past Accomplishments (Individual)

Lindsey Sleeth
I worked with Jameel on connecting endpoints with the frontend to display data dynamic about distributors and their products in a card style. Now that we have connected these, connecting the endpoints with data from the algorithm should be a matter of changing the URL and making a few minor edits. A picture of what these cards look like is shown below. Each distributor is limited to showing at most 6 products on a page and then it is paginated. Some distributors do not have all of their fields and that is because that information is null in the data that we were provided by Crafty.

11. Louis Glunz Wines

Order Days: -	Buffer: 1	Order Min: -
Term: -	weekBasis: -	daysToDelivery: -
daysToDeliveryEnd: -	startDate: -	

	SKU	Distributor SKU	Distributor ID	Name	Brand	Cost	On HandInventory Target Level	Size Name
+	994	994	11	Cabernet Sauvignon	Oak Grove Reserve	71.87	-1	12.0 - 750.0 mL bottles
+	995	995	11	Petite Sirah	Oak Grove Reserve	71.87	-1	12.0 - 750.0 mL bottles
+	996	996	11	Pinot Grigio	Oak Grove Reserve	71.87	-1	12.0 - 750.0 mL bottles
+	997	997	11	Zinfandel 2013	Oak Grove Reserve	71.87	-1	12.0 - 750.0 mL bottles

< 1 >

189. TeaSquares

Order Days：M, T, W, Th,   Buffer：1   Order Min：-
Term：4   weekBasis：-   daysToDelivery：-
daysToDeliveryEnd：-   startDate：-

	SKU	Distributor SKU	Distributor ID	Name	Brand	Cost	On HandInventory Target Level	Size Name
+	8078	8078	189	Acai Blueberry Tea	TeaSquares	16	-1	16.0 - 0.7 oz packs
+	8079	8079	189	Vanilla Chai Tea	TeaSquares	16	-1	16.0 - 0.7 oz packs
+	8080	8080	189	Citrus Green Tea Matcha	TeaSquares	16	-1	16.0 - 0.7 oz packs
+	10377	10377	189	Acai Blueberry Tea	TeaSquares	12	-1	12.0 - 0.7 oz packs

84. Health-Ade

Order Days：M, T, W, Th,   Buffer：1   Order Min：-
Term：5   weekBasis：-   daysToDelivery：-
daysToDeliveryEnd：-   startDate：-

	SKU	Distributor SKU	Distributor ID	Name	Brand	Cost	On HandInventory Target Level	Size Name
+	5894	5894	84	Original Kombucha	Health Ade	50.4	31	1.0 - 5.16 gal petainerKeg
+	5895	5895	84	Pink Lady Apple Kombucha	Health Ade	50.4	22	1.0 - 5.16 gal petainerKeg
+	5896	5896	84	Pomegranate Kombucha	Health Ade	50.4	22	1.0 - 5.16 gal petainerKeg
+	8867	8867	84	Bottle Package	Health Ade	-1	-1	12 - 16 oz bottles
+	9331	9331	84	Tap Handle - Pomegranate	Health Ade	-1	-1	1.0 - 1.0 ct

Elijah Buscho

I wrote pseudo-code for the algorithm necessary for assessing the accuracy of predictions:

```
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Accuracy per product
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observationPeriod #sample size of the data being looked at; we're likely just doing this on the test data set

inputs:
    #realOrderHistory not needed; only used in training
    orderRecommendations[observationPeriod]#output of algorithm for a given product
    saleHistory[observationPeriod]#client order (sale from Crafty's perspective) history for a given product
    missedSaleHistory[observationPeriod]# for a given product

realClientDemand = saleHistory + missedSaleHistory

#calculate missed sales that are algorithm will incur
for i in range(observationPeriod):
    if(realClientDemand[i] > orderRecommendations[i]):
        recommendationMissedSales[i] = realClientDemand[i] - orderRecommendations[i]
    else:
        recommendationMissedSales[i] = 0
    #calculate improvement in the ith day based on missed sales data for that day
    recommendationImprovement[i] = missedSaleHistory[i]/recommendationMissedSales[i] #inverted because smaller is better

#sum and average the daily improvements
for i in recommendationImprovement:
    averageImprovement += i

averageImprovement = averageImprovement/observationPeriod
```

Based on this pseudo code I discussed with Andrew to make sure all of the necessary data is available for the implementation.

Jameel Kelley
This week was spent working with Lindsey on the integration of the endpoints to the frontend to display data dynamics about distributors and their products. Additionally, the React Testing Library was set up this week. This was the only setup and no relevant tests were added as of yet.

Andrew Smith
Over the past couple of weeks, I worked on adding an endpoint to accept a JSON object with predictions to store in the database. This is needed as the algorithm runs it needs to store the predictions in the database so that the frontend can pull it any time they need the data. I also worked on getting an endpoint up for pulling all the SKU predictions only showing the latest prediction for each SKU. I got that endpoint working to pull all the predictions and only send the most up-to-date prediction.

Omair Ijaz
I worked on completing my last query which shows all incoming deliveries to the warehouse. At this point, the backend team has completed all the required endpoints.

Sam Stifter
I worked with Andrew on completing the table setup for storing prediction data. My tasks related to this were to set up the POST endpoint to create a new prediction entry.

Andrew and I went back and forth with the endpoints and we eventually had them all tested and implemented. We deployed it to the server and Andrew worked to get mock data in the database for early testing and integration. This will help the frontend be able to integrate the endpoint even though there isn't real data there yet. It will also allow the algorithm to save its results for later retrieval.

Devin Üner
I worked on integration, so making the machine learning algorithm update the predictions using actual data from our server. This required connection with a few of the APIs we set up. I also researched a bit more, on some more machine learning algorithms.

Individual Contributions

Name	Individual Contributions	Hours this Period	Hours Cumulative
Lindsey Sleeth	Displaying distributor information in distributor cards	10	35
Jameel Kelley	Setting up the test suite, distributor display cards	20	39
Sam Stifter	Prediction Table and Endpoints	20	62
Andrew Smith		15	65
Omair Ijaz	Incoming	10	54
Elijah Buscho	Testing algorithm	10	51
Devin Üner	Worked on integration and researched another potential algorithm	10	19

Pending Issues

Lindsey Sleeth
There are no pending issues at this time

Elijah Buscho

N/A

Jameel Kelley

No current pending issues

This week the main issue while working on the frontend was not having an endpoint for getting all the distributors extra data. This resulted in making N API requests where N is the number of distributors. This has since been resolved as the backend team has made a new endpoint to alleviate the issue.

Andrew Smith

After spending several hours trying to get this working, I messaged the backend team to help me with this as we need it ASAP so we can be finished. Sam then came in and got his version implemented and working. I also am having problems at the time of this report on getting the endpoint for predictions for all SKUs and only the latest predictions for each SKU. I have the query that would pull the correct information, I just can't seem to get it working in an endpoint. I also noticed that when Sam created the table he made the sku_id type int when sku_id is type long so we are going to be fixing that as well.

Omair Ijaz

There are few bugs remaining on the backend. Including setting tables up and server permissions

Sam Stifter

The server is having permissions errors when we deployed the finalized endpoint. More investigation will be needed to resolve this so the new endpoints can be used.

Devin Üner

Upcoming Plans

Lindsey Sleeth

My plans are to modify the URLs to display data that is given to us from the algorithm and to visualize this data in a graph. Additionally, if there is time I would like to create filters to only display distributors based on certain criteria.

Elijah Buscho

The plan is to implement the testing algorithm specified in the pseudo-code.

Jameel Kelley

The test suite configuration still needs to be worked on so they run on the compilation of the code. Additionally, the .yaml Gitlab file needs to be updated to add the frontend tests to the pipeline. Also changing the API requests to the new and updated versions.

Andrew Smith

I plan on working on the presentation and poster to wrap things up for the course. I will also work on any last-minute thing we need for data and endpoints that the other teams may need last minute.

Omair Ijaz

The final task is to complete the poster and the presentation. We have looked at poster designs and are in the process of mocking our poster.

Sam Stifter

I will plan on starting the presentation and the poster to wrap up the semester. I will also be on call for any changes that need to be made if bugs are found in the configuration of the backend server.

Devin Üner

Finish integration by making predictive software use the actual data. Also, make that all parameterized so it can be updated as needed.