Team 11
Purdue Eats

Team Members:

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Sprint 1 Planning Document

Overview

During this sprint, we hope to successfully setup user accounts, user authentication and several user personalization features. This involves implementing synchronous components across the front-end, API and database as well as integrating them together for cohesion. We also hope to begin work on the Graphical Neural Network module this sprint and carry it over into next sprint. We plan to implement data preprocessing, network layers and aggregation in the current sprint and carry over the implementation for training and integration into the next sprint.

Scrum Master: Eric Thompson

Meeting Schedule: Tuesdays/Saturdays @ 2:00pm, Thursdays @ 1:00pm

Risks and Challenges:

For our first sprint, we will be creating the fundamentals for the frontend, backend, and database of PurdueEats from scratch. A major challenge for this sprint will be implementing isolated software components in a way such that they integrate easily in future sprints. Doing this will ensure a smooth transition when adding new features later on in the project. Moreover, there will likely be a learning curve associated with the new technologies that comprise our tech stack. Balancing the time dedicated to prototyping and learning versus implementing actual features will be a significant challenge. Lastly, it is important for many of these features to be implemented accurately and in a timely manner, as several of our user stories in future sprints build on the current ones.

Current Sprint Detail

User Story #1
As a user, I would like to be able to register for a PurdueEats account so that all of my information is associated with my account.

#	Description	Estimated Time	Owner
1	Create successive UI panels to enter account details.	3 hrs	Anisha
2	Implement a corresponding API route for user registration.	2 hrs	Mark
3	Configure database schema to store user account details.	2 hr	Vaastav
4	Create a function to encrypt user credentials before forwarding to API.	2 hrs	Anisha
5	Create tests for the UI panel and API registering functionality.	3 hr	Anisha
6	**Total hours**	12 hrs	

Acceptance Criteria:

- Given that the UI panel is implemented correctly, a user will be able to successfully create a new user account.
- Given that the corresponding API route and database are implemented correctly, the data forwarded from the UI will be stored for easy access by the API.
- Given that the encryption function is implemented correctly, all data forwarded from the UI panel will be securely encrypted before forwarding to the server.

User Story #2
As a user, I would like to be able to login to my PurdueEats account so that I can track my meals and view wait times.

#	Description	Estimated Time	Owner
1	Create a UI panel to enter account username and password to begin login procedure.	2 hr	Anisha
2	Create UI panel routing from login panel to home page panel upon login validation.	1 hrs	Anisha
3	Create an algorithm to encrypt user credentials using secure hash algorithms (SHA).	3 hrs	Anisha
4	Create tests for UI panel and API login functionality.	3 hrs	Anisha
5	**Total hours**	9 hrs	

Acceptance Criteria:

- Given that the login UI panel is implemented correctly, a user will be able to successfully login to their user account.
- Given that the login UI panel is implemented correctly, a user will be redirected to the home page upon successfully logging into their user account.
- Given that the encryption algorithm is implemented correctly, a user's information will be securely encrypted before forwarding to our API.

User Story #3

As a user, I would like to be able to change my account name or password so that I have control over my credentials.

#	Description	Estimated Time	Owner
1	Create a UI panel to enter a new account name or password.	1 hr	Aniket
2	Implement corresponding API routes for user account name or password amends.	2 hrs	Mark
3	Create an algorithm to encrypt user credentials using secure hash algorithms (SHA).	2 hrs	Anisha
4	Create server function to update user credentials based on new user data.	2 hrs	Mark
5	Create tests for the UI panel and corresponding API functionality.	3 hrs	Aniket
6	**Total hours**	10 hrs	

Acceptance Criteria:

- Given that the UI panel is implemented correctly, a user will be able to successfully change either their account name or password.
- Given that the corresponding server function is implemented correctly, the revised data will be forwarded from the UI and stored in the database for easy access by the API.
- Given that the encryption function is implemented correctly, all data forwarded from the UI panel will be securely encrypted before forwarding to the server.

User Story #4

As a user, I would like to be able to enter my meal preferences so that I can have better meal recommendations based on my current likings.

#	Description	Estimated Time	Owner
1	Create a successive UI panel for meal preferences.	3 hrs	Aniket
2	Update API route corresponding to user's meal preferences.	2 hrs	Mark
3	Create a server function to save user preferences to the database.	2 hrs	Mark
4	Create unit tests to evaluate the UI panel, API route, server function and database transaction.	3 hrs	Aniket
5	**Total hours**	10 hrs	

Acceptance Criteria:

- Given that the successive UI panels are implemented correctly, a user should be able to successfully enter their meal preferences.
- Given that the server function is implemented correctly, the user's meal recommendation should be saved to the database.
- Given that the API route corresponding to a user's meal preferences is implemented correctly, the client should be able to make a POST request to forward the meal preference data to the server.

User Story #5
As a user, I would like my password to be reset when required so that I can still access my account if I forget my password.

#	Description	Estimated Time	Owner
1	Create a UI panel to reset password.	2 hrs	Eric
2	Create a link where users can pick a new password.	2 hrs	Eric
3	Implement an algorithm to send email from the app with reset password link.	2 hrs	Eric
4	Update API route corresponding to user credentials.	2 hrs	Sean
5	Create unit tests to evaluate if an email is sent and if the password updated successfully.	2 hrs	Eric
6	**Total hours**	10 hrs	

Acceptance Criteria:

- Given that the UI panel is implemented correctly, a user should be able to successfully receive an email with the ability to reset their password.
- Given that the password reset link is implemented correctly, a user should be able to pick a new password.
- Given that the API route corresponding to user credentials is implemented correctly, the user's password should be successfully updated.

User Story #6
As a user, I would like to be able to delete my user account so that my user-generated data is removed from the application's database.

#	Description	Estimated Time	Owner
1	Add a button to the UI panel that would prompt the user to delete the account.	1 hr	Eric
2	Add a popup that would ask the user to confirm if they would like to delete the account.	1 hr	Eric
3	Implement deletion of account from database when user requests deletion.	3 hrs	Mark
4	Implement deletion of accounts from Graph Neural Network data structures when a user requests deletion.	3 hrs	Sean
5	Implement UI to change back to registration/sign-in page when an account is deleted.	2 hrs	Eric
6	**Total hours**	10 hrs	

Acceptance Criteria:

- Given the UI panel is implemented correctly, the user should be able to send a request to the database to delete all of their account data.
- Given the UI panel is implemented correctly, the user should be prompted with a confirmation popup before the deletion request is sent.
- Given that the corresponding server function is implemented correctly, the user's data should be deleted from the database when the user requests it.
- Given that the corresponding server function is implemented correctly, the user's data should be deleted from the Graph Neural Network data structures when the user requests it.
- Given the UI panel is implemented correctly, it should return to the registration/sign-in page after user account info is deleted.

User Story #7

As a user, I would like to have a profile page so that I can edit my credentials, name, and meal plan as well as access my past meal history.

#	Description	Estimated Time	Owner
1	Create UI panel to display profile page information	2 hrs	Eric
2	Create an edit button so the user can change their name, meal plan, etc and have it updated in both the database and visually on the screen.	3 hrs	Eric
4	Link dining dollar transaction button and past meal history button to their designated pages.	1 hrs	Eric
5	Create an API route to obtain user's account data, name, and meal plan	2 hrs	Sean
6	Create unit tests for the UI panel and corresponding API functionality.	2 hrs	Eric
7	**Total hours**	10 hrs	

Acceptance Criteria:

- Given that the UI is implemented correctly it will display the users profile picture along with their name, meal plan, etc. and an edit button to change any information.
- Given that the user can edit their details, any new changes will be saved and updated both on the current screen as well as in the database.
- Given that the users can click on the dining dollars button and the past meal history button, it should navigate them to the dining dollar transaction page and meal history selection page respectively.

User Story #8

As a user, I would like to upload a profile picture to my profile so that others can see me when finding a lunch buddy through the app.

#	Description	Estimated Time	Owner
1	Create button to prompt the user for profile picture input.	1 hr	Eric
2	Program feature to upload image files from device to the application.	2 hrs	Eric
3	Display uploaded picture as user's profile picture on profile page.	2 hrs	Eric
4	Implement API route to forward user profile picture to server.	2 hrs	Sean
5	Create a server function to save uploaded pictures to the database.	2 hrs	Mark
6	**Total hours**	9 hrs	

Acceptance Criteria:

- Given that the UI is properly laid out, the UI should display a button that the user can click to change their profile picture.
- Given that the application can connect to the user's photos, when the user chooses to update their profile picture they can choose between pictures that they have saved to their device.
- Given that the application can display images, the picture uploaded by the user should be displayed as the user's profile picture.
- Given that the application and database can properly connect to each other, the user's profile picture should be saved to the database and associated with their account.

User Story #9

As a user, I would like to have a navigation bar so that I can access all of the features of the application from this screen.

#	Description	Estimated Time	Owner
1	Create a bottom tab navigation bar containing unique page icons.	2 hrs	Eric
2	Link navigation bar icons to designated pages.	3 hrs	Eric
3	Create unit tests for UI panel and application layout.	1 hr	Mark
4	**Total hours**	6 Hrs	

Acceptance Criteria:

- Given that the pages are implemented correctly, the navigation bar should be present on a majority of the application's screens.
- Given that there are pages created for each section, each icon should link to its corresponding page.

User Story #10

As a user, I would like to be able to easily view meal options across Purdue's various dining facilities so that I may choose where to eat from the options I'm given.

#	Description	Estimated Time	Owner
1	Create a UI panel to view all five dining facilities.	3 hrs	Aniket
2	Create a UI panel to view the menu items at a selected dining facility.	3 hrs	Aniket
3	Link pictures of each dining facility to each UI facility icon	2 hrs	Aniket
4	Implement API route to fetch menus of dining facilities for a particular day	2 hrs	Mark
5	Create unit tests for both UI panels and relevant API routes.	2 hrs	Aniket
6	**Total hours**	12 hrs	

Acceptance Criteria:

- Given that the UI panel is implemented correctly, a user should be able to view and select dining facilities and see their menu items.
- Given that the pictures for each dining facility is linked correctly, a user should be able to click the picture to be directed to their choice of dining facility.
- Given that the API route is implemented correctly, the menu that is being fetched should be for the facility for a particular day.

User Story #11

As a user, I would like to be able to filter meals based on if they are vegetarian or contains specific allergens so that I can be sure that what I am eating fits my dietary needs.

#	Description	Estimated Time	Owner
1	Create a drop-down menu to select filterable options on the sequential menu's page	3 hrs	Anisha
2	Implement API route to fetch allergen information of specific menu items	2 hrs	Mark
3	Add allergen legend referencing allergen icons to the drop down menu	1 hr	Anisha
4	Create unit tests for drop-down menu, filtered results, and API implementation.	2 hrs	Vaastav
5	**Total Hours**	8 hrs	

Acceptance Criteria:

- Given the UI is implemented correctly, a user would be able to select specific filter options from a drop-down menu.
- Given the menu item database is populated, the server should correctly return allergen information of a specific menu item.
- Given the filtration logic is implemented correctly, the sequential menu should successfully remove all menu items not matching filter requirements.

User Story #12

As a user, I would like to be able to view the distance from my location to each of Purdue's dining facilities so that I may account for distance to each facility as a factor in my dining decision-making.

#	Description	Estimated Time	Owner
1	Add distance to each dining facility under the respective facility on the menus page UI.	3 hrs	Aniket
2	Implement function to fetch user's current device location	2 hrs	Aniket
3	Implement a function to calculate distance from the user to each dining facility.	2 hrs	Aniket
4	Create tests for the UI panel, location fetching, and distance calculation	3 hrs	Aniket
5	**Total Hours**	10 hrs	

Acceptance Criteria:

- Given that the UI is implemented correctly under each dining court, the distance to the dining court from the user's current location will be listed.
- Given that the location fetching function is implemented correctly, we can accurately determined the user's current location.
- Given that the user's location is correctly determined the distance calculation function is implemented correctly, the distances calculated to each dining facility will be accurate to a reasonable degree.

User Story #13

As a user, I would like to able to view a map of my current location and each dining court so that I can receive directions to any dining court of choice.

#	Description	Estimated Time	Owner
1	Create a UI panel that shows a map with the user's current location	2 hrs	Sean
2	Add locations of each of the dining courts to the map component	2 hrs	Sean
3	Implement real-time updates of user location on map component	4 hrs	Sean
4	Create units tests for the UI panel and location updates	2 hrs	Sean
5	**Total Hours**	10 hrs	

Acceptance Criteria:

- Given that the UI is implemented correctly, there should be a map on the screen with the user's current location.
- Given that the UI is implemented correctly, the map should display dining court locations alongside user's current location.
- Given that the location fetching function is implemented correctly, the user's location should update as they move in real-time.

User Story #14

As a user, I would like to be able to rate meals so that I get better meal recommendations based on my preferences.

#	Description	Estimated Time	Owner
1	Create a “Record Meal” button on the sequential menus page that redirects to a record meal page.	1 hr	Sean
2	Create a record meal page that takes meal ratings as user input.	1 hr	Sean
3	Create an algorithm to package meal ratings input as a JSON object and send it to the server.	1 hr	Sean
4	Implement API route to receive meal ratings object and save to database	2 hrs	Sean
5	Create server function to forward meal ratings data to Graph Neural Network Module	2 hrs	Sean
6	Create unit tests for “Record Meal” button, API routes for meal ratings and relevant database transactions.	2 hrs	Sean
7	**Total hours**	9 hrs	

Acceptance Criteria:

- Given that the sequential menus page is implemented correctly, there should be a “Record Meal” at the top of the page.
- Given that the user presses the “Record Meal” button, the user should be redirected to a record meals page.
- Given that the API route is implemented correctly, the ratings data should be saved in the database and added to the Graph Neural Network Module.

User Story #15

As a user, I would like to be able to input times that I am free to eat so that I am only recommended meals during those times.

#	Description	Estimated Time	Owner
1	Create a button for users to upload their schedule on the profile page	1 hr	Anisha
2	Create a pop-up component that takes the user's schedule as input.	2 hrs	Anisha
3	Implement methods to recommend meals according to the user's schedule.	2 hrs	Anisha
4	Create an API route to forward user schedule and save to database	2 hrs	Sean
5	Create unit tests to check functionality of meal recommendations based on the user's schedule.	2 hrs	Anisha
6	**Total hours**	9 hrs	

Acceptance Criteria:

- Given that the button and pop-up components are implemented correctly, a user will be able to successfully input their schedule.
- Given that the method to recommend meals according to the user's schedule is implemented correctly, the user should receive meal recommendations that match the timings of their submitted schedule.
- Given that the API route for user schedule is implemented correctly, the route should save the user's schedule to the database.

User Story #16

As a user, I would like to be given meal recommendations that are consistent with my past eating habits so that I can stick to eating foods that I enjoy and have eaten in the past.

#	Description	Estimated Time	Owner
1	Construct Data Preprocessing Pipeline for menu items	4 hrs	Mark
2	Implement network layers class of neural network	4 hrs	Vaastav
3	Implement node aggregation function.	4 hrs	Vaastav
4	Implement a stochastic gradient descent algorithm to train the model	3 hrs	Vaastav
5	Create unit tests for aggregator and nonlinear functions.	3 hrs	Vaastav
6	**Total hours**	18 hrs	

Acceptance Criteria:

- Given the data preprocessing pipeline is implemented correctly, the menu items data should be standardized and include no null values.
- Given the data preprocessing pipeline is implemented correctly, the dataset should include only relevant feature sets.
- Given the node aggregation function is implemented correctly, the aggregation of nodes should equal the weighted mean of its neighbours.
- Given the stochastic gradient descent algorithm is implemented correctly, the model should run and successfully produce a set of shared parameters.

User Story #17

As a developer, I would like to receive and record menu items from Purdue's dining menu website so that I can use the data as a factor in our wait-time prediction modeling dataset.

#	Description	Estimated Time	Owner
1	Implement API route to forward data from recorded user meals and ratings to the GNN module.	2 hrs	Vaastav
2	Create function to construct bipartite graph from user ratings fetched from server	4 hrs	Vaastav
3	Create function to add user nodes to graph when new users register	3 hrs	Vaastav
4	Create function to add graph edges based on user preferences entered after sign-up	3 hrs	Vaastav
5	**Total hours**	12 hrs	

Acceptance Criteria:

- Given API route is implemented correctly, user meals and ratings should be correctly integrated into the GNN graph.
- Given graph construction function is implemented correctly, it should construct a bipartite graph with two disjoint sets of users and menu items respectively.
- Given user node addition function is implemented correctly, new users should have a corresponding node in the graph with their preferences assigned as graph edges.

User Story #18
As a developer, I would like to be able to visualize the model training process so that I can improve model performance based on new insights.

#	Description	Estimated Time	Owner
1	Plot GNN accuracy curve, loss curve, and model uncertainty, and store in database.	3 hrs	Mark
2	Create a backlog of GNN learning results, feature edits, and hyperparameter edits.	3 hrs	Mark
5	**Total hours**	6 hrs	

Acceptance Criteria:

- Given the plot of GNN accuracy progress is implemented correctly, a developer should be able to view the accuracy curve, loss curve, and model uncertainty for the model.
- Given the backlog is populated, a user should be able to see the history of GNN results and the developers' modifications.

Remaining Backlog

Functional

1. **Account Registration, Login, and Management**
    a. ~~As a user, I would like to be able to register for a PurdueEats account so that all of my information is associated with my account.~~
    b. ~~As a user, I would like to be able to login to my PurdueEats account so that I can track my meals and view wait times.~~
    c. As a user, I would be able to login to my PurdueEats account via two-factor authentication so that my account is more secure.
    d. ~~As a user, I would like to be able to change my account name or password so that I have control over my credentials.~~
    e. ~~As a user, I would like to be able to change my registered email id so that I can have flexibility with my account credentials.~~
    f. ~~As a user, I would like my password to be reset when required so that I can still access my account if I forget my password.~~
    g. ~~As a user, I would like to be able to delete my user account so that my user-generated data is removed from the application's database.~~
    h. ~~As a user, I would like to have a profile page so that I can edit my credentials, name, and meal plan as well as access my past meal history.~~
    i. ~~As a user, I would like to upload a profile picture to my profile so that others can see me when finding a lunch buddy through the app.~~
    j. As as user, I would like to have my login persist on exiting and re-entering the application so that I do not need to spend time logging in every time I would like to open the app.
2. **Application Navigation**
    a. ~~As a user, I would like to have a navigation bar so that I can access all of the features of the application from this screen.~~
3. **Dining Facilities and Menus**
    a. ~~As a user, I would like to be able to easily view meal options across Purdue's various dining facilities so that I may choose where to eat from the options I'm given.~~
    b. ~~As a user, I would like to be able to filter meals based on if they are vegetarian or contains specific allergens so that I can be sure that what I am eating fits my dietary needs.~~
    c. As a user, I would like to be able to view the wait-times at each of Purdue's dining facilities so that I can decide where it would be quickest for me to eat.
    d. ~~As a user, I would like to be able to view the distance from my location to each of Purdue's dining facilities so that I may account for distance to each facility as a factor in my dining decision-making.~~
    e. ~~As a user, I would like to able to view a map of my current location and each dining court so that I can receive directions to any dining court of choice.~~
    f. As a user, I would like to be able to mark meals as favorites so that I won't miss out on them when they are offered.

g. As a user, I would like to be notified when my favorited meals are available and being served at a particular location so that I can track my preferred meals.
h. As a user, I would like to be able to toggle notifications for each of my favorited meals so that I can customize the meals that I am tracking.
i. ~~As a user, I would like to be able to rate meals so that I get better meal recommendations based on my preferences.~~
j. As a user, I would like to use a search bar to search through the dining court menus on any given day.

4. **Meal Recommendation**
    a. ~~As a user, I would like to be able to input times that I am free to eat so that I am only recommended meals during those times.~~
    b. ~~As a user, I would like to be given meal recommendations that are consistent with my past eating habits so that I can stick to eating foods that I enjoy and have eaten in the past.~~
5. **Buddy System**
    a. As a user, I would like to be able to match with other users to dine at locations that meet our mutual dining preferences so that I can meet new people while still abiding by COVID-19 regulations.
    b. As a user, I would like to be able to share my current location with my matched user so that I can meet up with them and dine together.
    c. As a user, I would like to have a "I'm here" button so that I can let my matched user know that I have arrived at the agreed location.
6. **User Eating Habits**
    a. As a user, I would like to be able to view a visual representation of nutritional information regarding my meals so that I can have a clear understanding of the health impacts of the food I am eating.
    b. As a user, I would like to be able to view my past eating history so that I can keep track of my diet.
7. **Meal Plan Manager**
    a. As a user, I would like to be able to view the number of meal swipes that I have remaining for the week so that I can manage my meal swipe count better.
    b. As a user, I would like to be able to view my dining dollars balance so that I can track my transactions.
    c. As a user, I would like to be able to update and edit my dining dollars balance so that I can make necessary changes if my meal plan changes.
8. **Meal Reviews and Ratings**
    a. As a user, I would like to be able to write reviews about dining courts so that I can share my experiences with others.
    b. As a user, I would like to be able to upvote or downvote reviews from others so that I can promote relevant reviews and demote irrelevant ones.
    c. As a user, I would like to be able to report reviews that are spam or inappropriate so that they can be taken down.

d. As a user, I would like to be able to read reviews about dining courts so that I can learn more about a dining court from my fellow students before making a decision on where to eat.

9. **Accessibility**
    a. As a user, I would like to be able to adjust the app's text size so that I am able to clearly read information from the app.
    b. As a user, I would like to be able to choose between a dark mode and a light mode UI so that I can have a color scheme that suits my preferences.
    c. As a user, I would like to be able to access a settings page so that I can manage my notifications, light/dark mode UI, text size, and fun fact feature.
    d. As a user, I would like to be able to view answers to frequently asked questions so that if I run into issues with the app I can find potential solutions.
    e. As a user, I would like to be able to send feedback to the creators of the application within the application so that if there are any issues the developers can fix it.
    f. As a user, I would like to have a daily Purdue fun fact displayed each day that I log in so that I have an enjoyable user experience.
    g. As a user, I would like to disable the display of a Purdue fun fact so that I have a more minimalistic app experience.
10. **Summaries and Trends**
    a. As a user, I would like to view cumulative weekly summaries of what all users are eating through the app so that I can find popular eating trends.
    b. As a user, I would like to be able to see a wrap-up of the food that I have eaten over a semester so that I can look back on my eating habits for the semester.

Non-functional

a. As a developer, I would like to predict future wait-times for each dining facility based on the historical menu items and wait-time logs.
b. ~~As a developer, I would like to receive and record menu items from Purdue's dining menu website so that I can use the data as a factor in our wait-time prediction modeling dataset.~~
c. As a developer, I would like to receive and record user-inputted wait-time logs into the database so that I can use the data as a factor in our wait-time prediction modeling dataset.
d. As a developer, I would like to merge the dining menu log and wait-time log into a single dataset so that I can use the merged dataset for the wait-time prediction model to train and predict.
e. ~~As a developer, I would like to be able to visualize the model training process so that I can improve model performance based on new insights.~~
f. As a developer, I would like to be able to view database analytics so that I can track and scale the database.

g. As a developer, I would like to be able to view user feedback submitted through the application so that I can incrementally remove bugs and improve the application.
h. As a developer, I would like to view user data analytics so that I can improve user experience over time.
i. As a developer, I would like to view API interface documentation so that front-end and back-end developers can work independently.
j. As a developer, I would like the application to be containerized so that I have more control of the permissions and resources used by the application.