FINAL PROJECT

Learning Community Log and Survey Dashboard

Motivation

The motivation of this project is to create a dataset including log and survey data collected in a learning community project (https://dea1500.xyz/) and a dashboard to visualize the dataset.

This dashboard can be used by researchers who are interested in learning community to explore the dataset and construct research questions. It may also be used by instructors who are willing to apply this learning community project to their courses to help them better understand students' behavior and experience in the project.

Implementation Details and Function Introduction

R was used for data processing and dashboard development. "dplyr" was used for data processing; "shiny" was used for dashboard creation.

This project includes 2 parts:

1. Dataset:
   This part is a core dataset from DEA1500 Learning Community App and several Qualtrics Surveys including 6 lists: appdata.group, appdata.log, appdata.user, appdata.survey, appdata.post, appdata.comment.
   The log data was exported and processed from sqlite database which is used by dea1500.xyz web application.
   The survey data was collected by Qualtrics.
   Detailed data document can be found using ?dat in R.
   'Netid' was recoded for protecting privacy.
2. Dashboard:
   This part is a shiny app to visualize the dataset including app.R file as the source code for the app, test-app.R file for unit testing, and vignettes files for generating a brief introduction to this app.
   There are 3 parts in this app layout:

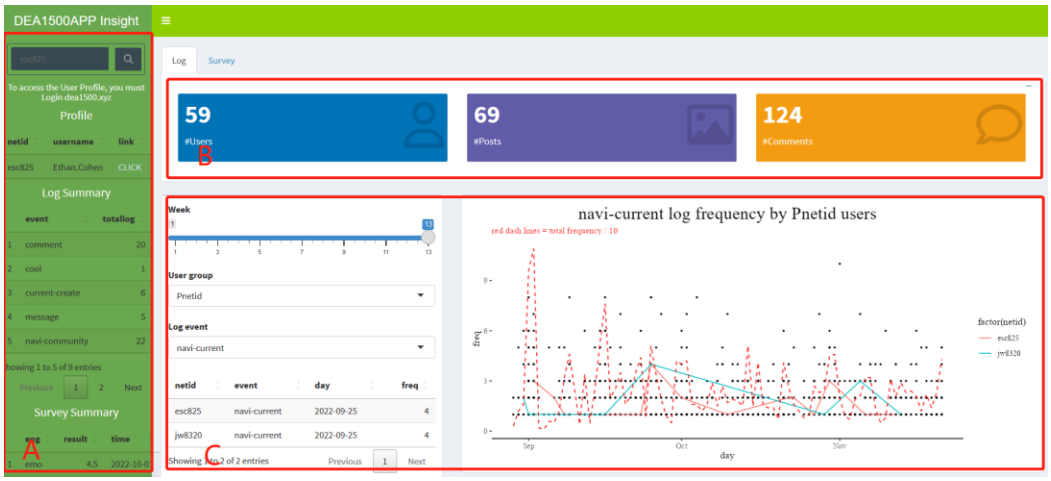

Figure 1: dashboard layout

A: user information search sidebar; B: key metrics value boxes; C: interactive data plot

There are two tabs in the application: log tab visualizes all log frequencies and present key metrics including #users, #posts, and #comments; survey tab visualizes all survey results which are measured by several Likert questions.

Part A is to search username, user profile link in learning community application (Figure 2), log data and survey data by user netid. Part B is to show some key metrics by time. Dragging the week slider/ time slider will show the values of these metrics in different times. Part C is the core part for this dashboard, plotting each users' log and survey data by time. The plot will be changed after selecting a specific user group (e.g., Pnetid-participant), Log event (e.g., message) or engagement type (cog-cognitive engagement). After clicking the interested point in the plot, its information regarding its netid, time, and frequency will appear in Part B. And all logs generated by this user will be connected to a line. If there are overlapped users, different lines will be drawn separately using different colors. By putting the user netid to the Part A search box, the user information will be shown in Part A.

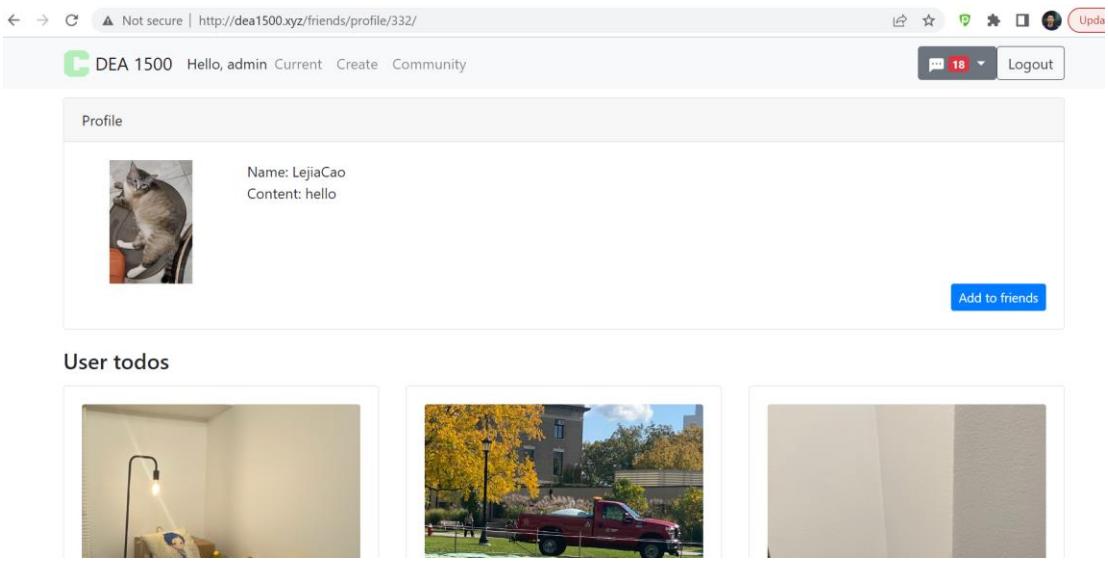

Figure 2: user profile in dea1500.xyz app

Several unit tests using “testthat” package were completed to test its main reactive expressions. A brief guideline was included in the vignette.

Future Directions

I will conduct several usability studies to understand potential users’ opinions regarding this dashboard and improve it accordingly.