Independent Study Proposal

Fall 2023

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Professor Judy Fox

Topic: Time Series Interpretation and Sensitivity Analysis, Data Representation

Overview

Help the team with assistance on the new project, which is aimed to develop a time series model to assist the financial department in determining factors affecting things like student loans and financial aid. I will work on specifically making a website to help display data found through lectures on Data Science classes provided to me. I also will work to integrate hands-on learning activities

Literature Review/Background

1. https://tddg.github.io/ds5110-spring23/lectures/
2. TFT for Interpretable Multi-Horizon
3. http://rafalab.dfci.harvard.edu/dsbook/getting-started.html
4. https://github.com/tddg/ds5110-spring23/blob/main/assets/ray_API_demo.ipynb
5. https://drive.google.com/file/d/1sdca8xPRLTBumEhoE0OJJB6WvuQ94lWS/view

Pasted above are all of the reference sites and documents that I have been using so far. If this is not what is being looked for here, I can provide better documentation.

Hypotheses to be explored

1. How can we best display and present data to new students on data representation and learning models' systems?
    a. What types of way should this data be presented?
    b. What activities should these students participate in to best grasp these concepts?
2. What type of model, and data to use for the new research project for the Finance team?

Expected research results

1. Reserach and understand Big Data Systems through watching lectures on classes and taking courses, specifically its application to learning models and Machine learning systems (MLSys)
2. Successfully design a web application for storing this information found, allowing for others to learn through it
3. Submit by deadline, with working and integrated ways for hands on learning through activities (AWS Academy, Jupyter Notebook)

Methodology

Data

The data is mainly from varying websites and sources on big data systems, such as classes formerly taught or from Dr. Fox.

Primary Goal

A book site that presents all of the information on big data systems, with integrated learning activities and a fluid design for others to use to increase their knowledge and comprehension of how Big Data Systems work and complement MLSys.

Sub-Goals and Experiments

1. Integrate learning activities through AWS classroom into the book site.
2. Help Dr. Fox with presentation and website touch-ups / design in order to present information in a more comprehensible and organized way.
3. Design the book site to be easy to navigate and understand for new students.

Assignments

Effort

I will spend 5-10 hours per week for this independent study, as much as I would normally do for a 3 credit CS course.

Schedule

Week	Readings:	Code:	Paper Progress	Dr. Fox suggestions / Milestones
1			N/A	
2		Began CSS and HTML for intro website	N/A	Work towards a more fluid design with a focus on a different site / book design
3		Experimented	N/A	Integrate learning

		with AWS academy, Jupyter notebook for integration		objectives for students using the site
4		Furthered the website design with new navbar, as well as brought over notes from lectures done already	N/A	Begin working towards helping Dr. Fox with presentation and website layout / design
5				
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11				
12			Submit Research Paper & Submission?	
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14				