Assignment-P5

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QUESTION-1

Online education - OMSCS program

Positive effect :

Lower cost [3] and flexibility enabled by online education programs such as OMSCS has made it possible for wide variety of people to pursue their dream of higher education, regardless of location, age, class or professional background [1][2]

Courses or degree programs offered online have lower cost than traditional on-campus courses, which opens up opportunity for students from different income brackets. Cost reduction is made possible through efficient use of available digital technologies, while reducing operating costs. Once course videos are developed, it is reused semester over semester , with little involvement of Professor. Online class size tend be very large (300- 400 students) and mostly managed by less expensive teaching staffs such as TAs or adjunct faculty. Additionally, online offerings eliminates the need of expanding on-campus capacity where enrolling more students would require adding more space.

It also provides great deal of flexibility to students (especially working professionals). Online classes can mold with student's schedule and allow them to view lectures at times that works best for them, which is not possible in rigid schedule imposed by traditional education where student is expected to attend lecture at specific time.

Negative repercussion :

This flexibility of online learning comes at a cost. Due to the way learning is structured in traditional vs online education, significantly higher level of self-discipline and self-motivation is required on student's part to succeed in online setting.

Face to face interaction with instructors and requirement to attend class as per schedule, keeps student motivated and engaged.

With online education, there is little interaction with instructor. In many cases, instructors don't have adequate training or experience to effectively manage a large online class (300+ students) . This severely degrades the quality of instructions or feedback student receives. It also impacts student's motivation level.

Design :

Over the years, OMSCS program has made great strides in streamlining its courses and providing superior learning-material but it considerably lacks in fostering quality interaction with instructors. Program can be restructured to give a feel of 'blended learning', where students get face time with Professor as in traditional setting , while maintaining the perks of online learning. Instructor can hold office-hours once in 3-4 weeks, which gives students opportunity for spur-of-the moment questioning. It will not only improve social interaction but may help better understand a concept.

Another way of enhancing 'blended learning' in online setting, is to incorporate in-person immersions at campus, where student gets to meet fellow students and faculty. This helps build meaningful relationships, which platforms like piazza and slack can't. Many universities (such as Notre Dame, SMU) have adopted this model.

QUESTION-2

For two years (2014-2016), I worked on a project which required re-designing of subscriber-data management on cellular network.

With explosion of mobile traffic in past decade, air-interface resources have become heavily congested, despite adding spectrum. Cellular network wasn't simply able to keep with the demand, which impacted subscriber growth , cutting into company's bottom line. This situation was worsened by existing subscribers who grandfathered (legacy) Unlimited data-plans, indiscriminately hogging air-interface resources during all hours of the day . A new design and policy was required to established equity between these resource-hoggers and new subscribers with limited data-plans. Though well-intentioned, this design got into cross-hairs with Net-Neutrality (a hot topic in 2015) and shaped the ultimate design.

Stakeholders and how their motivations influenced design.

- Upper management : Senior Executive wanted a low-cost and quickly-deployable solution that reduces the congestion (on air-interface) and continues to support subscriber-growth. Their main motivation was to meet or exceed Company's annual revenue target. Push for this cheap and easy solution was guided by tunnel vision, ignoring the resistance it might meet in the context of then ongoing policy debate about Net Neutrality.

- Designers : Design team consisted of Network Engineers, Solution Architects and Product managers. Team brainstormed several design ideas, which can be broadly classified into two categories – 1) Solution-A proposed a dynamic Qos (Quality of service) approach, which paces subscriber's data-speed based on current congestion level in the network. 2) Solution-B proposed a static 'one-size-fit-all' approach, where user is throttled all the time, once he exceeds his data-limit.
  While Designers vehemently supported solution-A, it was vetoed by Upper management because Solution-B was economical and deployment-ready. Though Solution-A was bit expensive (would have required require 6-8 months of development), Designers were motivated by that fact it uses network resources way more efficiently when compared to solution-B and would have kept customers happy as they are not throttled all the time.

- Tech-Ops : Dynamically changing QoS-profiles in the network would make it difficult for Technical-support to troubleshoot subscriber-complains regarding data-speeds. Hence, they supported solution-B, which was motivated by their primary concern of being able to resolve the customer-ticket as soon as possible.

- Legal team : Since debate on Net-Neutrality was heating up, legal team was mainly concerned with the optics – They advocated for another redesign which was a hybrid of Solution A & B but were ready to package which ever solution Executives approved, in a Net-Neutral fashion. This made Designer's job difficult, as Designers were required to use a specific

language and avoid certain terms when documenting and describing the design.

- Consumer : Abovementioned stakeholders had conflicting motivations, which led to a decision of deploying suboptimal Solution-B. This impacted all subscribers, as throttling only a certain set of customers (ones with legacy unlimited plan) would have been viewed as 'discriminatory' practice. Few years later, hybrid solution replaced solution-B in the network due to increased scrutiny from FCC and customers.

QUESTION-3

I personally find Piazza interface quite usable. It takes after modern web browser design, which makes its intuitive and learnable. But I'm disappointed by its search capability. In following section I'm presenting a redesign for search capability in piazza and how search-results are presented to user.

Redesign

1. Make search filters more discoverable. This can be done by displaying search-filters underneath search-bar from get-go (Fig 3.1). Currently search-tips appear only after a search is performed.
2. Allow multi-level search, where user can filter posts using multiple criteria's , say by *folder* and *date* .Currently Piazza doesn't support that - user can perform search by only one criterion. Fig 3.1 shows search-filters as checkboxes , allowing user to select more than one criterion.

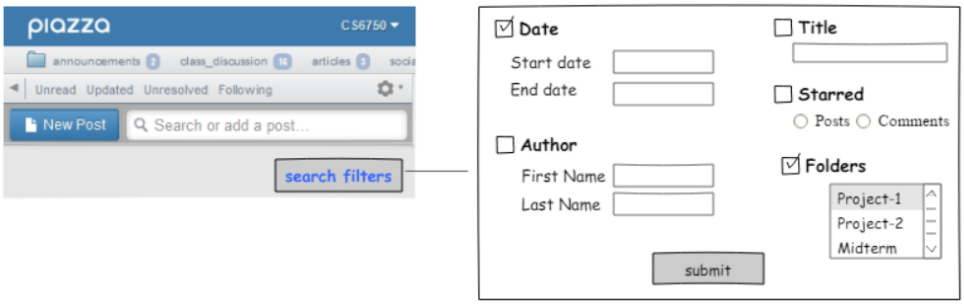

Fig 3.1 :

3. Make search keywords appear as bold when user selects a post from search-results and takes user to exactly where first instance of keyword appears in post. (Fig 3.2) Currently keywords are bolded only in the list of search-result

that appear on left-pane and takes user to the top of the post. This is frustrating for threads that are very long.

4. Option to mark certain comments/answers as favorite within a post. That way user can perform search only on comments they marked favorite. Currently 'favorite' button is applicable to entire post. It is not very helpful if that post becomes insanely long, which is not uncommon in large online class. (Fig 3.3)

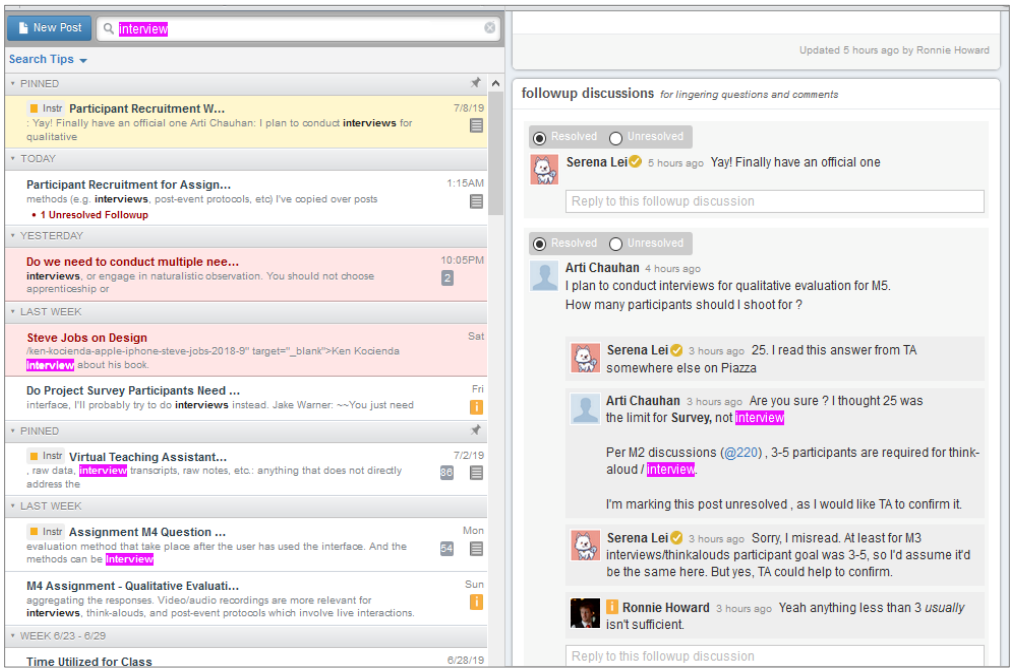

Fig 3.2 : *With redesign , search word ='interview' is highlighted in post (right pane) and it takes user to where first instance of keyword appears.*

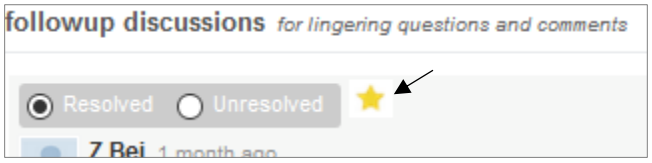

Fig 3.3 : *option to mark particular comments 'favorite' with in a post.*

Justification

1. Displaying search-filters underneath the search bar on main -screen rather than as a drop-down which appears after a search is performed, enhances **discoverability** . User expects search related operators to be displayed close to

search-bar. This new design provides desired structure to interface and maps to user's mental model.

2. This redesign follows principle of **Simplicity and Ease**, where user can filter posts by Contributor or Title by just clicking the checkbox (Fig 3.1). He doesn't have to remember the complex syntax (shown below) required by current design.

3. By highlighting key-word in post (right-pane) , new design shrinks **gulf of evaluation** as user now precisely knows location of searched word in the post (Fig 3.2)
4. New design takes user to first instance of keyword in the post. This aspect of redesign is **consistent** with search-operation performed in other popular applications (Word, Pdf etc.)
5. It provides user **flexibility** in performing search based on multiple criteria. Here interface is taking **participant view**, anticipating user's context (large online class) where current search functionality might be very limiting.
6. By providing a 'star' button in follow up discussion posts (Fig 3.3), it builds **affordance**. User can immediately draw upon previous knowledge (from other tools) and click the button to make a comment 'favorite'. It also serves as a filtering criteria which reduces clutter.

Above-mentioned redesign reduces the cognitive load user experiences while performing a search in current interface and shrinks gulf of execution by providing easily discoverable multi-choice search-filters.

QUESTION-4

Paper I selected to answer this question is titled 'CivilServant : Community-Led Experiments in Platform Governance' (CHI 2018 Paper) [4]

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Summary :

This paper tackles the difficult question of how to use (online) behavioral experiments to create a democratic society, rather than for top-down control. Author argues that we , as designers and researchers , have an obligation to understand and test the risks and benefits of social interventions online, as our work shapes powerful policies that govern human affairs.

There are ample examples where company is aware of societal harm (discrimination , hate-speech, self-harm , political divide , terrorism) enabled by their product but motivation to address the issue is low.

Main issue continues to be the secrecy of these social experiments , where deception studies are default and big tech companies conducting these experiments don't inform user. Author highlights how secrecy leads to *Information Asymmetry* where companies have disproportionately higher behavioral power compared to the people who use their platforms.

To address above issue, paper proposes a system called 'Civil Servant' which enables citizen-led experiments. With CivilServant, it's possible to redesign experimentation-infrastructures for an open society, where communities (platform users - moderators) conduct publicly-accountable field-experiments, without oversight of platform-owners. Paper establishes usefulness of this system via case study on reddit to 1) verify and manage fake news 2) control non-compliant and unruly behaviors from disruptive users.

<u>High level working of CivilServant (Fig 4.1)</u>

1. The process of using CivilServant begins when an online community identifies a testable question about the effects of moderation work. Eg : 1) Does displaying community-rules on top on discussion page make commenters comply more ? 2) Does displaying a fact-checking link dampens spread of inaccurate news ?
2. If moderators wish to continue, they invite the CivilServant (which presents itself as bot account to community) to become a moderator with archival-only privileges to their community.
3. System then collects historical and ongoing data on platform to such as submitted posts, comments, ranking algorithm behavior, moderator actions etc. to construct a formal study design

4. Study's goals, interventions, variables, and analysis procedures are clearly communicated to platform users.
5. Once study is approved by community and IRB, experiment begins , regularly notifying moderators on progress. At conclusion, system presents analysis of each hypothesis, which is shared and discussed/debated with community.

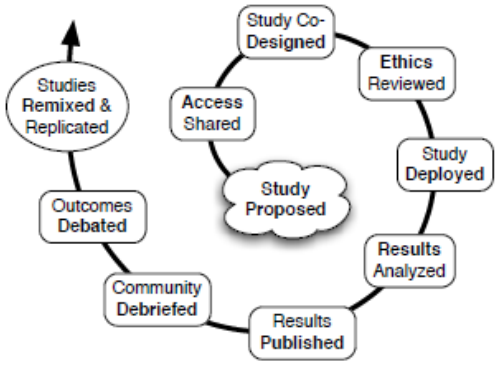

Fig 4.1 : *Workflow of community-led experimentation used by CivilServant.*

Why you selected this paper ?

For past few weeks I have been trying to finalize redesign elements for my Project, which includes face-recognition. As I researched on this topic, I got interested in learning more about how this technology presents ethical issues and how can we use it for human enablement, rather than as a discriminatory tool. Research shows Facial recognition technology has difficulty identifying gender in people of color than in white people, yet this technology is sold to law-enforcement to police citizens, despite strict opposition from ACLU and privacy advocates. Reason I selected this paper is because it touches this core issue of how these technologies are (ab)used to govern/monitor people and how we, as a designer, must acknowledge and address these concerns in our design.

REFERENCES

1. Online Learners are Increasingly Diverse
2. Online college students demographics
3. Is attending college online cheaper ?
4. ACM DL - Civil Servant(CHI 2018)