

CSEP 590B, Homework 4, Due May 4, 6:30 PM

This week, you have the choice of two assignments: either do a design exercise based on the election monitoring system that James Long presented, or write a review of his case study for the Development Engineering text book. These should be a similar amount of work, and will be graded on the same scale.

Submit a PDF write up by email to Naveena before 6:30 PM, Monday, May 4.

Option 1. Technology Design of Photo Quick Count / VIP:Voice

Suppose you are in charge of developing technology for a new version of PQC / VIP:Voice. How would you design the system? Are there technological innovations that could improve the intervention?

For this assignment, describe how you would design and implement a new version of the system. You may use whatever technologies you think are most suitable. You can also assume that you have sufficient engineering resources available to implement the system. The system must target developing countries with “challenging” election settings. For this assignment, you may focus on one particular country, which could either be one of the ones covered in the readings or a different country. If you wish, you may focus on one of the components of PQC / VIP: Voice instead of the full system. (For example, you could focus on Tally verification, or on managing recruitment of volunteers.)

Your write up should describe your design and justify your design decisions, and describe how it would potentially improve some aspects of election monitoring. Here is one possible way you could approach this (but this is not required – you can go deep into different aspects of this).

1. Describe to overall operation of the system and what actions it will support. (No need to motivate the problem.)
2. List the technical requirements for the system.
3. Give an overall architecture for your system, identifying the key components that would be built and recommendations for the technologies. A diagram or two might be helpful.
4. Discuss how this would be deployed in one of the countries, and how it would address issues.
5. Raise a number of technical areas that would need to be addressed, as well as opportunities for making the system more powerful. This could include things such as information security, protecting privacy of informants, support for a range of consumer devices, designing a mobile application to improve image capture, techniques to increase coverage of polling places, design to make the system cover multiple countries, data analytics for election analysis, and so on.
6. Choose one or two of these areas to discuss in more depth.

Your write up / answers should be about 1500 words or three pages (exclusive of diagrams).

Option 2. Review the Case Study.

James Long is writing a case study chapter for the Development Engineering text being compiled by a group from UC Berkeley. For this assignment, you are to read the draft chapter, provide some general

feedback, and answer a group of questions. Your assignments will be shared with James so that he can see your responses.¹

For the book, each author will present their challenges in implementing and scaling technology in the form of a “case study”. Each author will present their challenges in implementing and scaling technology in the form of a “case study”. All case studies will build on a common template, to create continuity and pedagogical consistency. The case studies will emphasize the different components of the development engineering cycle (innovation - evaluation- adaptation). **“Innovation”** will address how the researcher identified a development challenge that could be addressed using technology, and implemented/scaled the technology in the field. The authors will write this section with an emphasis on the iterative nature of implementation – retesting prototypes based on pilot runs, refining hypothesis due to feedback from the field. **“Evaluation”** will address how the innovation’s successes and shortcomings were assessed, and what are the lessons and takeaways from the success or failure of this particular case study for students, other researchers, and future implementers. **“Adaptation”** will focus on attempts to scale up an existing technological innovation and the challenges in doing so.

Answer the following questions about the Case Study:

- 1: How does the text address each of the three major components: Innovation, Evaluation, and Adaptation. What are the key takeaways for each of these components?
- 2: What are the key engineering lessons presented from this case study that are likely to generalize to other Development Engineering contexts?
- 3: Does the text provide enough context for you as a student? Where can it provide more detail or context to those who are learning about the area? Is there additional information from the presentation/discussion that would be useful in the case study.
- 4: Any other feedback for the author?

Your write up / answers should be about 1500 words or three pages.

¹ If you have concerns about having your work shared with James, please contact the instructor. James will have no role in evaluating assignments.