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In 2020 from June 1st to August 14th, I remotely interned at Facebook's infrastructure team as the role of a software engineer. My responsibility is to finish a project called "automated cherry-pick manager", which is to automatically discover pairs of commits in which the bad commit introduces breakages and the good commit fixes the problem. The team wants it automated because 1) many code versions are being tested in performance regression experiments and the bad commits introducing breakages could have an impact on further experiments, and 2) developers manually adding such cherry-pick pairs would be error-prone and time-consuming.

The main job tasks I did in this project were 1) adding more detailed information to cherry-picks (e.g., repo, application) and extending the criteria of selecting them; 2) building one database to store automatically discovered cherry-picks, making it compatible with the manual configuration file, and capturing the actions of cherry-picks (e.g, addition, deletion, modification, approval); 3) building another database to keep track of the experiment history information so that we can infer which commit leads to successful information and which leads to failed information; 4) injecting the code logic into the current experiment pipeline and updating corresponding information in databases; and 5) extending the problem from the problem of just one single breakage to scenarios of multiple breakages.

Before the internship, I had been researching the performance testing of regular expression usage and building microbenchmarks. Although this internship project is not directly related to performance testing, the team does a lot of interesting work around performance testing including microbenchmarks. Through the regular team discussion, I gradually learned a lot of details of performance testing in the industry, which I think will be beneficial to my current research.

Besides, software development is a combination of multiple skills: coding, documentation, testing, communication, and collaboration. It is important to acquire the ability to quickly get familiar with the team's code and to contribute to the team project iteratively, a growth mindset different from what I am used to in college.

Through this internship, I also observed how software engineering research topics and principles are practiced in the industry, such as avoiding the code smells, naming conventions, documentation, and testing techniques. Through my observation, developers in our team care more about the features they want to implement or the goals they want to achieve. Other aspects of their code are considered and commented mainly by code reviewers. I remembered one comment on my code is not to directly

modify the passed function arguments of not basic types because the argument might be used in other places and modification could cause unexpected error or results. In this context, experience matters regarding code quality not only now but also in the future. On the other hand, developers do write unit tests for part of their code but do not attempt to achieve high code coverages. From my point of view, they care more about integration tests than unit tests although the former is less frequent.

The most satisfying aspect of this internship is that I overcome the psychological barrier of asking for help. I was not afraid of asking questions but was afraid to be dependent on others. In other words, I preferred to figure out what to do and do it. Speaking loud is not as hard as I imagined. I realized that I can ask questions when I do not have prepared answers, even when I am not clear about what the right question is. The most important thing is to make it happen, get feedbacks early, review it, and then calibrate the direction.

The least satisfying aspect? I think it is the issue of working from home. While doing research, I have more flexible time, which is not possible during the internship. Plus, there is a three hour time difference from EST to PDT, which means I lost three hours to work with my colleagues and ask questions. I made the wrong decision to change my daily schedule and quit my routine activities, which turned into a disaster after my internship ended.

Regarding the self-evaluation, I use the feedback from Facebook as the criteria to rate myself. The quality of my work, my contribution to the team, my improvement in communication skills were acknowledged.