

Jordan Brown

## Project Milestone Report 1

Although there haven't been any real significant changes to the higher level goals of the project, we have made many refinements to make some more attainable and concrete goals. Specifically, we are focusing on extending the work presented in [Lifty](#) to also work with existing SQL databases. This will allow the program repair to work in applications that run on the web with a database. We plan on implementing this extension on top of [Yesod](#), a web framework for Haskell. After that is done, we plan to begin working on a gradual refinement type system for a more widely used language, likely Java or Javascript, so that we can perform repair across more programs.

Up until now, I have worked mainly on completing all the background reading and learning necessary for me to be productive in the Spring. Specifically, I have read papers about information flow, [Liquid Haskell](#), policy agnostic programming, and statically verifying security in applications with database accesses. Additionally, I have learned Haskell, as well as the Yesod web framework. To learn Haskell and Yesod, I have been working on a conference management system for SigBovik, which I had aimed to complete by the end of this semester. At this point, I have most of the features implemented and am beginning to focus on polish.

Although the conference management system is not yet complete, the requirements have changed a bit, so I do not feel that I am behind. Specifically, we plan on applying the extension to Lifty mentioned above to the conference management system. As such, I have spent time thinking about how that might work, as well as thinking about how to integrate the Lifty library into the Yesod web framework.

So far, I've only been surprised by the amount of collaboration that is happening on this project. My weekly meetings with Professor Yang have expanded to include [Professor Ranjit Jhala](#) from UCSD, [Nikki Vazou](#) from UCSD, and [Nadia Polikarpova](#) from MIT. Having so many people from all over the country interested in my work has been very encouraging!

Since the focus of my work is shifting from policy inference to the web framework and gradual type system, I am going to be heavily revising the original milestones I described in my project proposal. These changes will reflect the fact that I will be mainly working on the web framework, and hopefully beginning work on the gradual type system, as opposed to working on policy inference. This will also change my goals, and how I will measure my success, but I am still figuring just how much of the gradual type system will be realistic to complete before the end of the Spring semester.

I do not need any additional resources to work on my project, and I am looking forward to continue making progress this Spring.