Project Proposal for CS 697AB Machine Learning

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**Project Title:**

Automatic Reviewers Recommendation for Code Reviews

**Project Idea:**

Code Review is an essential part of the software development cycle. Github, ReviewBoard and Gerrit are some of the code review tools that developers use to enforce their product’s quality. To publish a code review, review publisher needs to specify the code reviewer(s). The quality of the code review largely depends on the expertise of the reviewer(s) so it becomes a common problem for the review publishers to identify the best reviewers for their source code change. To address this problem, multiple prototypes have been built to automatically recommend reviewers in the review process. But as of this writing, none of the main stream code review tools have the feature to recommend code reviewers. It would be a meaningful project to build this feature into one of the open source code review tools which will accelerate the review process.

**Software:**

Gerrit was developed at Google by Shawn Pearce for the development of the Android project. Gerrit is now an open source project being used by many big name companies such as Google, eBay, Eclipse Foundation, Garmin and more. The goal of this project is to build the reviewer recommendation feature into Gerrit. This will be treated as an enhancement. The learning algorithm will use Gerrit’s database to create the learning model.

**Dataset:**

Prior code review data from open source projects like Mylyn, Eclipse and Android.

**Papers to read**

1. Bahrami Zanjani, M.\*, **Kagdi** **H.**, Bird, C., Automatically Recommending Peer Reviewers in Modern Code Review, IEEE Transactions on Software Engineering
2. V. Balachandran, “Reducing human effort and improving quality in peer code reviews using automatic static analysis and reviewer recommendation,” in *Proceedings of the 2013 International Conference on Software Engineering*. IEEE Press, 2013, pp. 931–940.
3. P. Thongtanunam, C. Tantithamthavorn, R. G. Kula, N. Yoshida, H. Iida, and K. ichi Matsumoto, “Who should review my code? A file location-based code-reviewer recommendation approach for modern code review,” in *the 22nd IEEE International Conference on* *Software Analysis, Evolution, and Reengineering (SANER)*, 2015, pp. 141–150.
4. H. Kagdi, M. Hammad, and J. Maletic, “Who can help me with this source code change?” in *Software Maintenance, 2008. ICSM 2008. IEEE International Conference on*, Sept 2008, pp. 157–166.