## Graduate School of Science and Technology Master's Thesis Abstract

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Abstract			
The risk to using third-party libraries in a software application is that much needed maintenance is solely carried out by library maintainers. These libraries may rely on a core team of maintainers (who might be a single maintainer that is unpaid and overworked) to serve a massive client user-base. On the other hand, being open source has the benefit of receiving contributions (in the form of External PRs) to help fix bugs and add new features. In this paper, we investigate the role by which External PRs (contributions from outside the core team of maintainers) contribute to a library. Through a preliminary analysis, we find that External PRs are prevalent, and just as likely to be accepted as maintainer PRs. We find that 26.75% of External PRs submitted fix existing issues. Moreover, fixes also belong to labels such as breaking changes, urgent, and on-hold. Differently from Internal PRs, External PRs cover documentation changes (44 out of 384 PRs), while not having as much refactoring (34 out of 384 PRs). On the other hand, External PRs also cover new features (380 out of 384 PRs) and bugs (120 out of 384). Our results lay the groundwork for understanding how maintainers decide which external contributions they select to evolve their libraries and what role they play in reducing the workload.			