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# Open Source Software in Research and Development

*(Guidelines for Postgraduate Students)*

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Two case studies were used in our study; they were two postgraduate projects that exploited FoSS but lacked proofs of concept. In addition, a survey was also conducted to investigate the level of usage of OSS in research. The sample population was quite small; hence, there should be some level of caution in generalizing the knowledge level of students as represented by the survey. 39 respondents out of the total 65 respondents said their works require prototype development; 26 respondents needed to develop their works ground-up, while 39 respondents needed to modify existing projects/codebases; 52 respondents leverage OSSD in their works, while 13 respondents do not; 40 respondents have access to sample/similar projects on the Internet, while 25 respondents do not; 35 respondents consider themselves proficient with the tools they use, while others are not. Lastly, the numbers of respondents that chose conceptualization, identification of tools, implementation and evaluation of a research work as the most challenging aspect of the research were 8,16,15,26, respectively.

In the two case studies, the researchers were required to present a proof of concept and access to the source code of their works. However, the researchers could not meet up with the requirements. In addition, they could hardly pitch their contributions to the existing body of knowledge and evaluate their works using comparisons. An exemplary OSS project that followed the core principles required in using OSS in a research is TransferHTTP+CAS. The work claimed that content sharing, session handoff and their control services in the Web-browsing context can encourage collaboration and interaction among the Internet users. The work contributed to the state-of-the-art in its domain by comparing the implemented prototypes<sup>1</sup> with emerging industry works, such as WebRTC, Google Wave, and Open APIs.

The OS project components that a researcher should be aware of include: the project community, its developers, source code and license(s). The first author considered all the components during his work to produce the artefacts and show a proof of concept. As a result, this paper proposes the following guidelines for using open source in research: visiting related project and wiki websites for information, joining their communities of developers; providing access to one's source code so that different individuals can contribute in different ways to the cohesive whole; and taking cognisance of the license used by the software that is being extended.

<sup>1</sup> <http://www.ngportal.com/micadeyeye/index.php/2009/09/13/projects-videos/>