Review 14

3/8/12

CS6V81.502

Seungtack Baek

**Clones: What is that Smell**

In this Paper, Rahman et al. questions whether code clone is really defect prone, as convention says. The researchers broke this question into three parts, such as the following.

1. Out of all the bugs, how many bugs are contributable to clones?
2. Out of all the clones, how many are buggy or benign?
3. Out of all the clones, are prolific clones buggier than non-prolific ones?

To answer above questions, they took the history of four open source projects (Apache, Evolution, Gimp and Nautilus) and analyzed each project. In their analysis, they found the bugs through linking form each project’s source history and they found clones using a tool DECKARD (for each revision they used, namely snapshot).

As a result of this study, they found that

1. Clones contribute to about 20% of the bugs.
2. “Clones are not really a major source of bugs.”
3. Non-prolific clones are buggier than prolific ones.

Or, in one sentence, “Clones don’t really smell that bad.”

In fact, clone itself is not something we should watch for, but changes to the clones (more specifically, inconsistent changes to the clones) is what we should care about. But their study is little bit biased, since they did not consider the severity into their consideration. If they used metrics for severity, such as “the lifespan of bugs”, the outcome might have been different.

Also the result was expected. I do encounter more of “semantic” bugs than code clones. I have worked on a project with clones, but most of the time, you can search to find other clones and propagate the changes accordingly.

**Question:**

1. Actually, I do not get their conclusion for question2. They claim “Since the overall clone ratio is less than the clone ratio in bugs, the clones are not a major source of bugs.” I think what they should to say is that “clones resides more outside of bugs, rather than buggy code, thus clones are not the major source of bugs.” But their reasoning is backward… why??