CLIME: Command Line Metrics for Git Projects

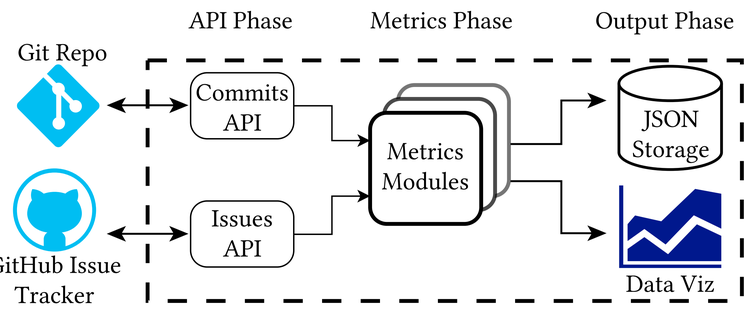
Matt Hyatt, Neil Klingensmith, Amy Kuhl, Jacob Palmer, Rohan Sethi,
Ethan Stoneman, Nicholas Synovic, George Thiruvathukal, Sohini Thota

Loyola University Chicago

Research Goals

To create a ready made set of command line tools that are both **modular** and **extensible** to *longitudinally* evaluate and visualize process metrics of Git repositories.

Architecture



Derived Process Metrics Summary

Metric	Definition
Bus Factor	Number of actively contributing developers.
Productivity	Ratio of change in lines of code to average time between commits.
Issue Spoilage	Average open time of all open issues.
Issue Density	Ratio of known defects to project size.

Table 1. Derived process metrics that can be computed with CLIME.

Bus Factor

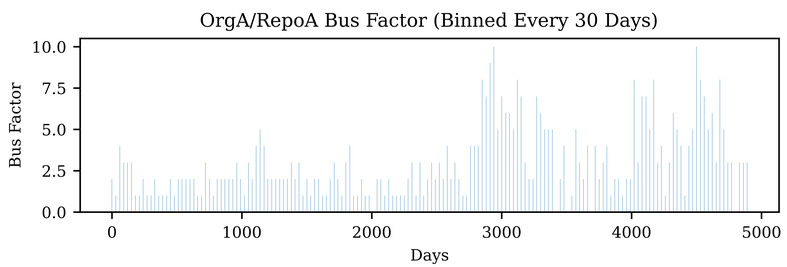


Figure 1. **Bus Factor** is the sum of unique committers per day. The etymology of this term is that the project will be in jeopardy if all of its active contributors are simultaneously hit by a bus.

Productivity

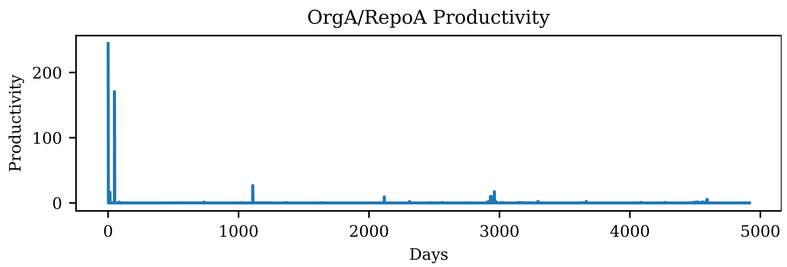


Figure 2. **Productivity** is the absolute value of the sum of changed lines of code per day.

Issue Spoilage

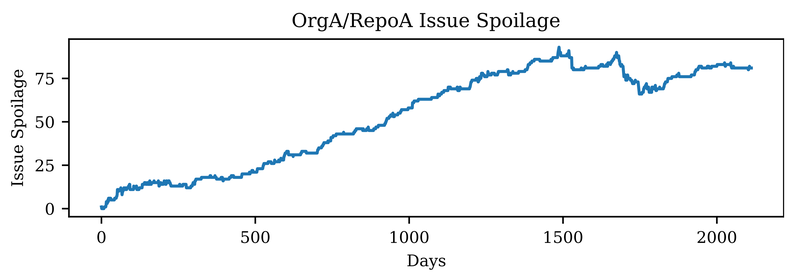


Figure 3. **Issue Spoilage** is the number of remaining open issues at the end of the day.

Issue Density

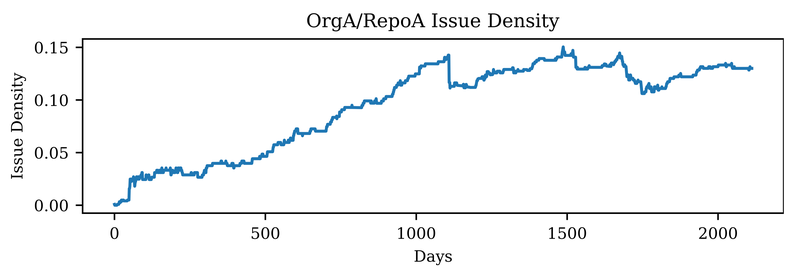


Figure 4. **Issue Density** is the number of remaining open issues divided by the size of the project measured in thousandths of lines of code.