Applications of Standard ML at Google

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Recitation Section SWE

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1: Abstract (15%)

We present a collection of Google projects using Standard ML, as well as lessons learned while introducing SML engineering at Google.

Keywords: SML, Standard ML, 150, Harper, Google, software engineering, programming languages

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2: Introduction (50%)

Standard ML (commonly known as SML) is a general-purpose functional programming language used primarily to instruct freshman computer science majors at specific Pittsburgh-based universities. Among its key strengths are strong compile-time type-checking, Turing completeness, and ability to compile to JavaScript[1]. The simplicity and beauty of algorithms written in SML has won it a considerable fanbase concentrated along Forbes Avenue[2], and it doesn't hurt that its syntax is easy to write *operator and operand don't agree [tycon mismatch]*.

Google is an American software company headquartered in a really large number[3]. Product domains of Google include search engines, self-driving engines, mobile operating systems, stationary operating systems, big data, small data, and more. Since Google's software engineering is widely considered to be of high caliber, it is clear that CS students at Carnegie Mellon could learn a lot about how to write production-ready and scalable SML from a study of existing uses of it within Google.

We present an overview of each and every product at Google utilizing SML, the benefits we reaped during the transition to SML, and advice from seasoned SML engineers at Google.

3: Each And Every Application Of Standard ML At Google, All Benefits Reaped During All Transitions We Made To Standard ML, And Advice From All Of Our Seasoned Standard ML Engineers at Google (0%)

4: Future Work (20%)

We know for a fact that for every application, benefit, or piece of advice given in the last

section, the reader gained a lot of knowledge. As a result, we are considering studying the use within Google source code of another concept taught to freshman computer science majors at specific Pittsburgh-based universities: dynamically checked *contracts*, such as preconditions and postconditions. The author has personally written contracts[4] in production Java code running on Google Search, so we expect the results of such as study to be enlightening.

5: Notes (8%)

The author would like to note that SML is an ambiguous acronym, and Google is very much interested in Standard Machine Learning, Supervised Machine Learning, etc.

The author does like SML andalso prefers OCaml.

6: References (7%)

[1]: https://www.smlserver.org/smltojs/

[2]: Coincidentally, Carnegie Mellon University's canonical address is 5000 Forbes Ave.

[3]: $10^{10^{100}}$

[4]: https://github.com/google/guava/wiki/PreconditionsExplained