Towards Methods for Identifying High-Quality Domain-Specific Programming Plans



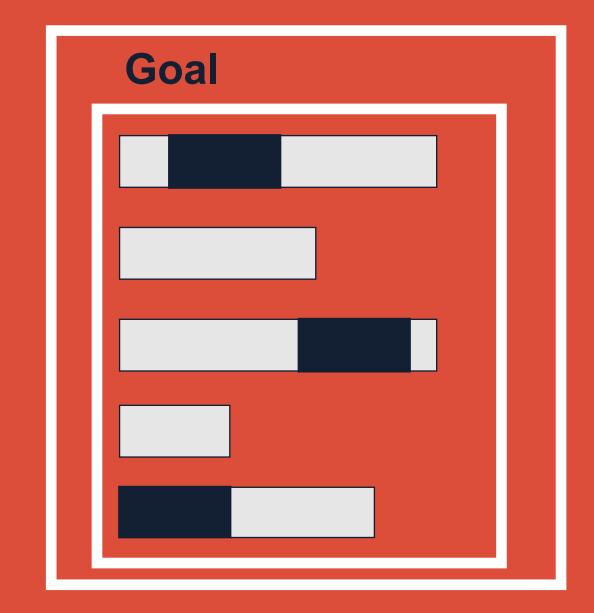




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Domain-specific programming plans can support application-focused learning, which is particularly motivating for non-majors [1].



A domain-specific programming plan is a piece of code common to programs from a particular application area that achieves a specific goal in that context.

But we lack clarity on how to identify domain-specific plans at scale.



Plans identified in CS1 context are too general to represent work in specific domains.



Authors typically omit details of their plan identification process.

Code Corpus
Analysis

Expert-Instructor
Opinion

What strategies might identify domain-specific plans?

By scraping Stack Overflow and GitHub, one can collect corpuses of programs in particular topics and search them for patterns, by hand or possibly with code similarity algorithms.

Plans may also be found in code written by instructors of specialized courses.
These plans can be collected from assignments or by interviewing

Plans may be gathered from domain experts by interviewing them about their programs, with questions designed to elicit common patterns and goals.

Guided Expert

Pattern Elicitation

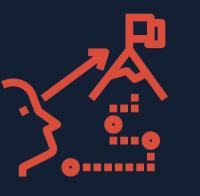
What makes a 'good' domain-specific plan?



The plan should be commonly used in well-written programs.



Plan information should not be too complex.



The plan should achieve a goal specific to its domain.

Metrics

instructors.



ExpertInstructor
Opinion

Guided Expert
Pattern
Elicitation

3

Frequency in Professional Use







Comprehensibility to Novices

Alignment

with Domain

Context







[1] K. Cunningham et al. "Avoiding the Turing Tarpit: Learning Conversational Programming by Starting from Code's Purpose."