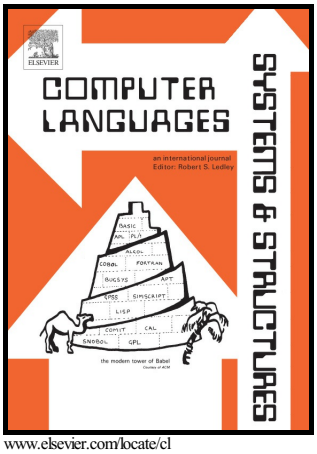

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Facilitating the Development of Cross-Platform Software via Automated Code Synthesis from Web-Based Programming Resources☆

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Abstract

When a mobile application is supported on multiple major platforms, its market penetration is maximized. Such cross-platform native applications essentially deliver the same core functionality, albeit within the conventions of each supported platform. Maintaining and evolving a cross-platform native application is tedious and error-prone, as each modification requires replicating the changes for each of the application's platform-specific variants. Syntax-directed source-to-source translation proves inadequate to alleviate the problem, as native API access is always domain-specific.

In this article, we present a novel approach—*Native-2-Native*—that uses program transformations performed on one platform to automatically synthesize equivalent code blocks to be used on another platform. When a programmer modifies the source version of an application, the changes are captured. Based on the changes, *Native-2-Native* identifies the semantic content of the source code block and formulates an appropriate query to search for the equivalent target code block using popular web-based programming resources. The discov-

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