Agile Smartphone Porting and App Integration of Signal Processing Algorithms Obtained through Rapid Development

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Abstract : Certain research projects in Computer Science often involve research on existing signal processing algorithms and developing improvements on them. Research budgets are usually limited, hence there is limited time for implementing the algorithms from scratch. It is therefore common practice, to use implementations provided by other researchers as a template. These are most commonly provided in a rapid development, i.e. 4th generation, programming language, usually Matlab. Rapid development is a common method in Computer Science research for quickly implementing and testing new developed algorithms, which is also a common task within agile project organization. The growing relevance of mobile devices in the computer market also gives rise to the need to demonstrate the successful executability and performance measurement of these algorithms on a mobile device operating system and processor, particularly on a smartphone. Open mobile systems such as Android, are most suitable for this task, which is to be performed most efficiently. Furthermore, efficiently implementing an interaction between the algorithm and a graphical user interface (GUI) that runs exclusively on the mobile device is necessary in cases where the project's goal statement also includes such a task. This paper examines different proposed solutions for porting computer algorithms obtained through rapid development into a GUI-based smartphone Android app and evaluates their feasibilities. Accordingly, the feasible methods are tested and a short success report is given for each tested method.