Embedded GUI development tools optimized for small footprint

Julien Happich - November 05, 2013

Express Logic has announced GUIX, a graphical user interface (GUI) development framework featuring a low-overhead runtime engine and development tool with automatic code generation, for embedded systems capable of graphical display.

The tool targets the ARM 32-bit MCU and MPU architectures, including Cortex-M3, M4, A8, and A9, in medical devices, consumer electronics, and industrial control equipment. It includes a full-featured runtime graphical library fully integrated with ThreadX, Express Logic’s popular RTOS. Designed to meet the growing need for dynamic user interfaces with limited hardware resources, GUIX uses the same optimized design and coding methods of ThreadX, it is distributed with full ANSI C source code and has no run-time royalties.

Most embedded system programmers are not LCD specialists and do not want to program these displays at the lowest level, which involves constructing individual graphical shapes and objects (“widgets”). Instead, to speed time to market, most developers use a library of routines that manage the GUI details. By describing the widgets at a high level, such libraries help developers to enhance programming productivity and avoid many errors.

GUIX offers developers an advanced UI framework and rich library of unique widgets tailored to help them construct whatever GUI they envision. Programmers can call GUIX functions from their C application programs, and GUIX performs all the necessary drawing functions to produce a clear, interactive GUI on LCD screens of various sizes and resolutions.

GUI designers can create GUIs using GUIX Studio, the companion PC-based application that enables WYSIWYG rapid prototyping of GUI designs. With GUIX Studio, the designer can select, drag-and-drop, and resize images, backgrounds, widgets, and other elements of a powerful GUI without having to write a single line of code. GUIX Studio generates the code necessary to implement the exact GUI design constructed on the PC. The generated code can be dropped into the application and executed on the target system.

A complete GUIX UI application can be executed on a PC desktop within the GUIX Studio environment, enabling developers or designers to quickly and easily generate and demonstrate UI concepts and test screen flows as well as observe screen transitions and animations. When completed, the design can be exported to target-ready C data structures that are ready to be compiled and linked with the GUIX and ThreadX libraries as part of a project.

Developers can produce pre-rendered fonts for their applications using integrated font generation in GUIX Studio. Fonts can be generated in monochrome or anti-aliased formats that are compressed to save space on the target. Fonts can include any set of characters, including Unicode characters for
multilingual applications. Importing graphics from PNG, JPG, or BMP files and converting them to compressed GUIX pixelmaps for the target system is another integrated feature of GUIX Studio, and many of the GUIX widget types are designed to incorporate developers’ proprietary graphics for a custom look and feel. In addition, developers can customize default colours and drawing styles used by the stock GUIX widgets, allowing them to customize the appearance of GUIX very easily. GUIX Studio also generates and maintains application strings for any number of target languages.

For more information, visit Express Logic and visit the GUIX page.

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