

基于i.MX RT1060-EVK的LVGL电动自行车 演示工程

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1. 简介

本应用笔记向用户介绍了如何使用GUI Guider实现电动自行车仪表盘，并在i.MX RT1060-EVK评估套件上运行该应用程序。要复制这个应用程序设计和演示，您需要：

- GUI Guider 1.3.1版或更新版本（可在 www.nxp.com/gui-guider 获得）
- MCUXpresso 11.5.0版或更新版本
- i.MX RT1060 SDK软件包2.11.0版
- MIMXRT1060-EVK评估套件
- Rocktech RK043FN02H-CT LCD显示屏
- （也支持新的LCD，RK043FN66HS-CTG。用户可以在GUI Guider中选择RK043FN66HS，并在MCUXpresso SDK中为LCD配置设置 DEMO_PANEL_RK043FN66HS）

2. 电动自行车演示工程概述

此电动自行车演示工程由三个主要屏幕组成：

- 综合
- 骑行详情1
- 骑行详情2

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每个屏幕都包含大量的骑行信息，用户可以轻松地浏览液晶面板，查看显示的信息。



图1. 综合

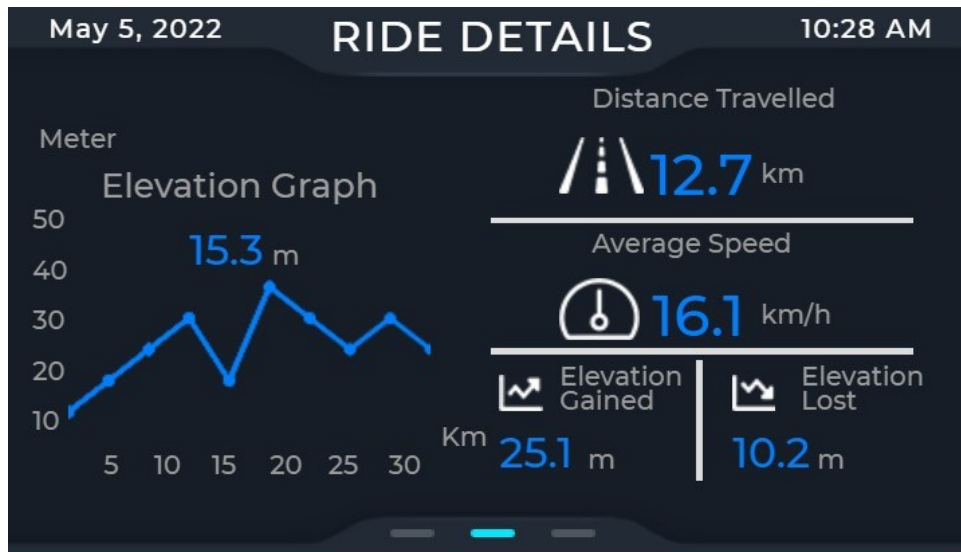


图2. 骑行详情1



图3. 骑行详情2

2.1. 电动自行车GUI Guider工程

启动GUI Guider并选择“导入本地工程”。浏览到电动自行车演示工程的GUI Guider工程文件“evkmimxrt1060_ebike_lvgl8\ebike_demo_gg Ebike_lvgl8.guiguider”。

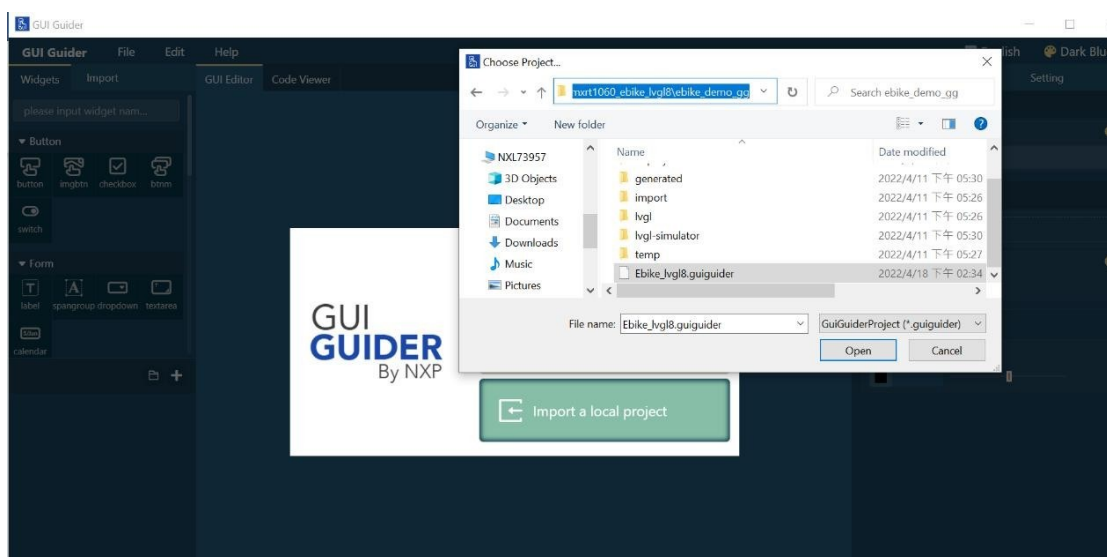


图4. 导入一个本地工程

电动自行车演示工程的第一个屏幕是综合，有四个LVGL小部件，即图像、标签、仪表和弧形小部件。图像小部件用于显示背景图像和所有图标。标签小部件用于显示文本。仪表和弧线小部件用于设计车速里程表。



图5. 综合

在骑行详情1中，除了图像和标签小部件用于图像/图标和文本显示。图表小部件用于设计高程图。



图6. 骑行详情1

骑行详情2包括图像、标签和弧形小部件来显示骑行信息。



图7. 骑行详情2

所有这些屏幕的顶层都有一个图像按钮，图像按钮的不透明度属性被设置为0，为透明。这些图像按钮使用触摸事件来加载下一个屏幕。

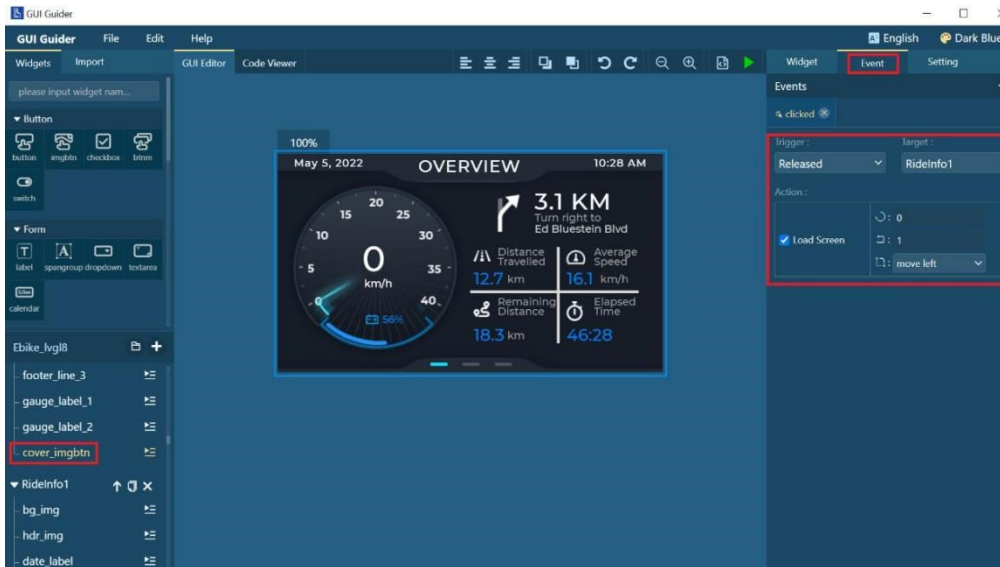


图8. 图像按钮的事件处理程序

完成GUI设计后，点击“generate_code”，等待代码的生成。点击“文件”→“导出代码”→“MCUXpresso代码”→并导航到SDK中的lvgl_guider示例。然后源文件被导出到这个例子中，允许进一步的应用程序定制和开发。

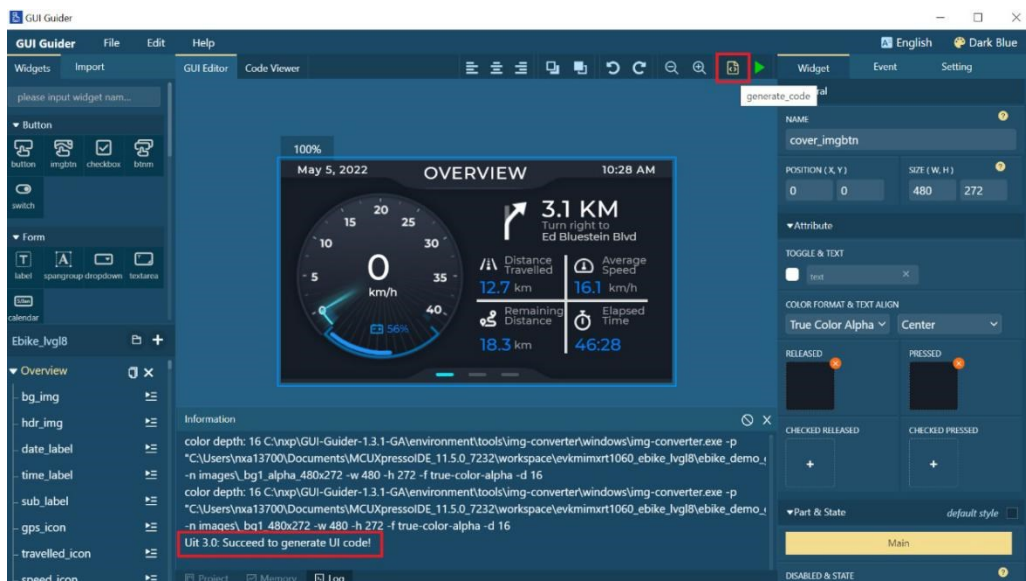


图9. 生成代码

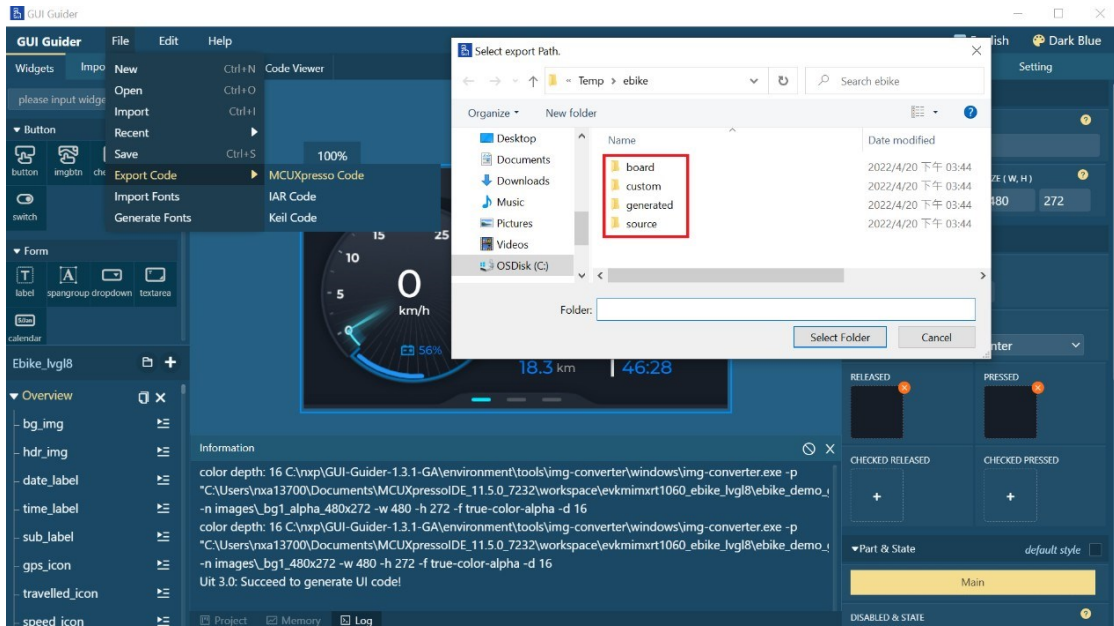


图10. 将代码导出到SDK的lvgl_guider示例中

2.2. 电动自行车MCUXpresso工程

启动MCUXpresso IDE并选择“从文件系统导入工程”。点击“浏览器”并导航到E-Bike工程文件夹。点击“完成”，将电动自行车工程导入MCUXpresso IDE。

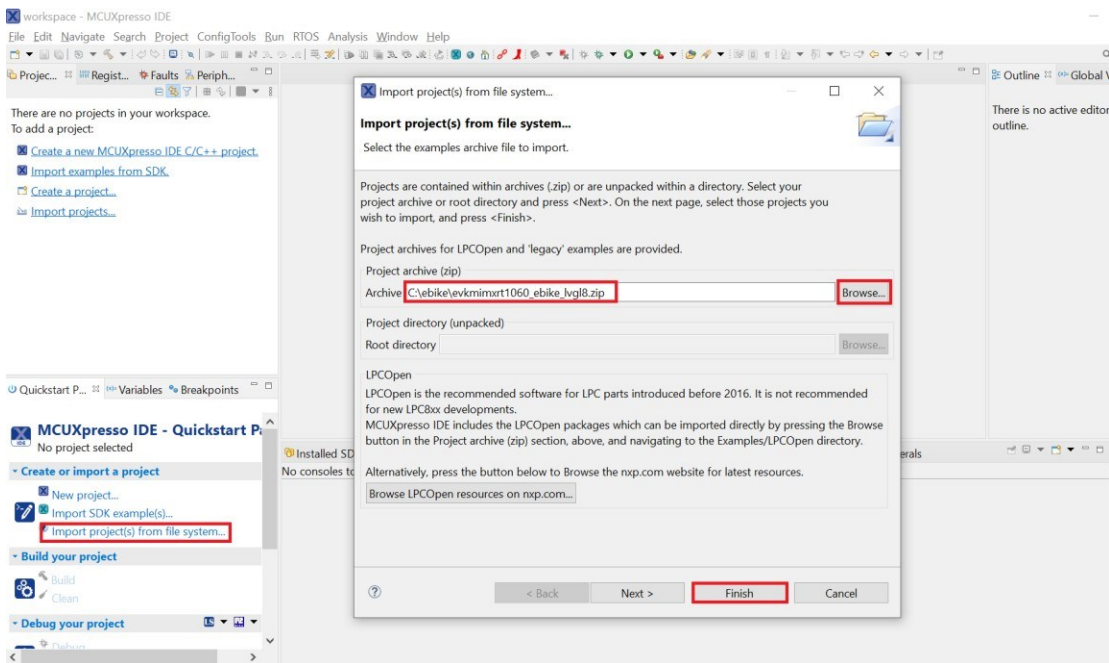


图11. 将电动自行车工程导入MCUXpresso IDE

2.2.1. 文件结构

电动自行车演示工程是i.MX RT1060-EVK的一个例子，它基于i.MX RT1060 SDK v2.11.0中的lvgl_guider示例。文件夹结构遵循MCUXpresso SDK示例的标准。生成的 (*generated*) 文件夹和源文件 (*source*) 文件夹都是很重要的。

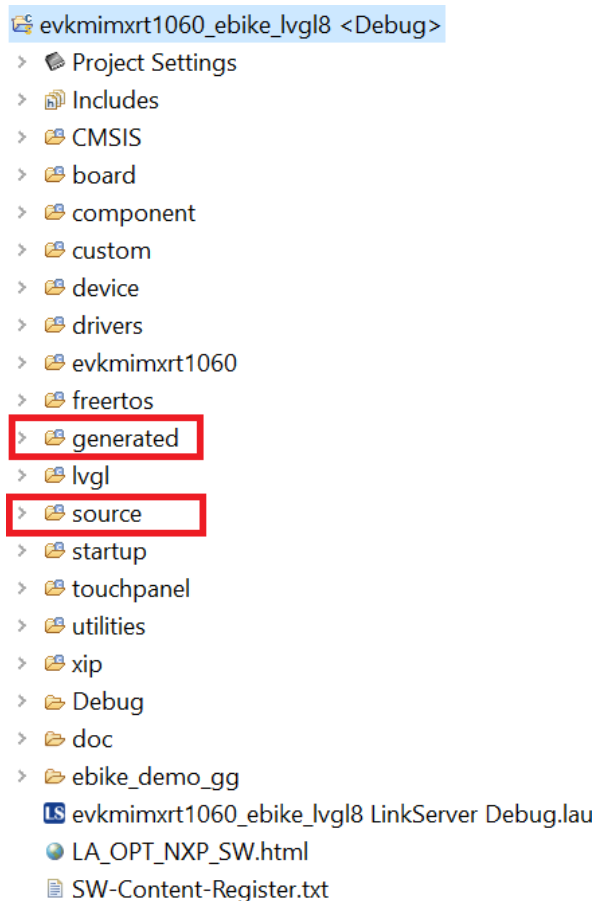


图12. 电动自行车演示工程的文件结构

生成文件夹包含GUI Guider生成的文件。这些文件是GUI Guider在重建GUI Guider工程并在此导出代码时修改的。源文件夹包含手动编码的源代码文件，用于信息更新，更新 *gui_events_handler.c/h* 中的标签、仪表和图表小部件。



图13. 生成文件夹和源文件夹中的源文件

2.2.2. 将工程加载到电路板上

要将工程加载到评估板上，首先点击Build图标来构建工程。在i.MX RT1060-EVK评估套件连接到PC的情况下，点击调试 (Debug) 图标将工程加载到i.MX RT1060-EVK。

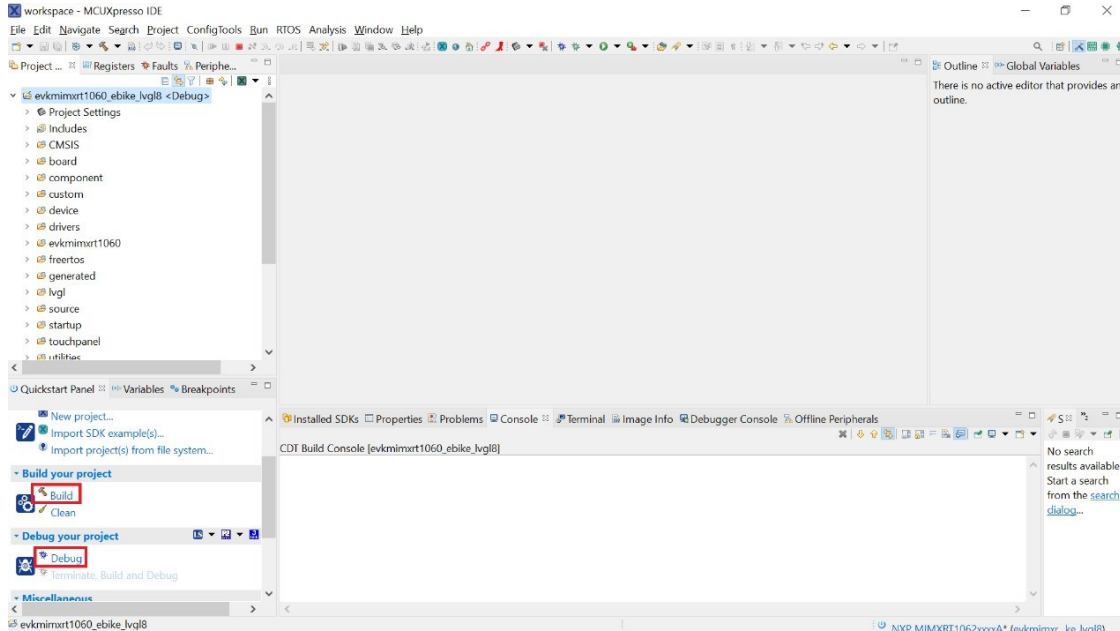


图14. 将工程加载到评估板上

3. 修改电动自行车演示工程

有两种方法可以修改电动自行车的演示工程：

1. 通过GUI Guider
2. 直接通过源代码

第一种方法（通过GUI Guider）是修改电动自行车演示工程GUI的首选方法。通过GUI Guider，可以很容易地添加、删除或修改LVGL小部件来改变GUI设计。然而，在某些情况下，需要手动修改源代码。通常当GUI Guider不能提供需要的功能时（如来自MCU外设的事件触发），就需要这样做。

4. 总结

本文档展示了使用GUI Guider和LVGL进行的电动自行车演示工程的开发。将生成的代码导出到SDK的lvgl_guider示例中，然后通过MCUXpresso IDE在i.MX RT1060-EVK上运行电动自行车演示。此外，还对源代码进行了检验，并概述了如何修改源代码。它为应用程序的开发提供了一个有帮助的跳板。

有关GUI Guider的更多信息，请参见www.nxp.com/gui-guider。如果您对演示有疑问或需要支持，请在community.nxp.com向恩智浦社区提交问题。

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