# Introduction

This book has been written to guide Electronic engineers in designing and developing their own custom embedded systems using STM32 Cortex-M4F Microcontrollers.

The book introduces concepts related to microcontrollers, Embedded Systems, EDA Tools, Firmware Development Tool Chain etc.

Finally the book ends with complete details of a generic development board with most of the features of the STM32 microcontroller implemented along with a generic library and sample codes. This information can be used as reference by readers to design their own custom systems and contribute towards the progress of electronics and embedded systems.

# Embedded System

Embedded system

# STM32 Cortex-M4F

## EDA Tools

## Electronics Development

### Power Supply Circuit

### Programming Circuit

### Reset Circuit

### Boot Circuit

### IO Circuit

### UART Circuit

### SPI Circuit

### I2C Circuit

### ADC Circuit

### USB Circuit

### RTC Circuit

### External Clock Circuit

## Firmware Development

### Firmware Development Tool Chain

### IO Application

### UART Application

### I2C Application

### Timer Application

### SPI Application

### ADC Application

### DMA Application

### RTC Application

# SENSORTAG

## Schematic

## Source Code

## Gerber Files

## Features

## Limitations

## Future Enhancements

# References

### Tool Chain