#### ART OF EMBEDDED SYSTEM DESIGN

Bobby

February 8, 2018

## Part I PREFACE

In these book, I will summerize all I know about the embedded system, and give some practical electronic designs what I have done in my career. Also, I want to improve the ability of using LATEX by myselt. This book is in the public domain. All the copyrights are under GPL 2.0. Thanks all for your attentions! All the materials are from books, internet, etc. I will list as much references as possible, but I am not sure that I can list all. For any improper or defects, your suggurestions are warmly welcomed.

Best Regards!

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Part II

Physics

Solid state physics

Semiconductor physics

### Part III Circuit basics

# Part IV Analog circuit

Transistor circuit analysis

Transistor circuit design

FET circuit analysis

FET circuit design

# $\begin{array}{c} {\rm Part~V} \\ {\rm Analog~VLSI~design} \end{array}$

Current source

Current mirror

Differential amplifier pair

#### OP AMP design

# Part VI Digital circuit

Finite state machine

# Part VII Analog digital converter

# $\begin{array}{c} {\rm Part~VIII} \\ {\rm Verilog~HDL} \end{array}$

# Part IX Digital VLSI

CPU design

# $\begin{array}{c} {\rm Part} \; {\rm X} \\ {\rm PCB} \; {\rm design} \end{array}$

#### Part XI PCB SI&PI

# Part XII C and C++ programming

# Part XIII Data structure and algorithms

# Part XIV Computer orgnization

# ${\bf Part~XV}$ ${\bf Computer~architecture}$

#### Microcontroller

#### Digital signal processor

#### ARM processor

# Part XVI Operating system

#### Part XVII Linux administration

#### Part XVIII Linux kernel

### Part XIX Linux driver development

# $\begin{array}{c} {\rm Part~XX} \\ {\rm Linux~system~porting} \end{array}$

Buildroot

# Part XXI Computer Network

TCP/IP protocols

Socket programming

# Part XXII Signal and system

# Part XXIII Ditial signal processing

 $\mathbf{FFT}$ 

FIR

#### IIR

### Part XXIV Digtal image processing

# Part XXV Audio signal processing

# Part XXVI Modal analysis

### Part XXVII Project Development

8-channel data acquistion system design

#### 32-channel data acquistion system design

64-channel data acquistion system design

# Part XXVIII Appendix

Table 24.1:				
11	1	12	4	6

Table 24.1 indicate that

The universe is immense and it seems to be homogeneous, in a large scale, everywhere we look at.

furnished his toy with a romantic legend about a much larger "Tower of Brahma", which supposedly has 64 disks of pure gold Gold —wow.

Are our disks made of concrete? resting on three diamond needles. At the beginning of time, he said, "God" placed these golden disks on the first needle and ordained that a group of priests should transfer them to the third, according to the rules above. The priests reportedly work day and night at their task. When they finish, the Tower will crumble and the world will end.

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