

An Annotated Embedded Systems Bibliography

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1 Books

Barr [4] is a readable general introduction that focuses on mundane issues such as compilers, linkers, and target boards.

Brown [12] is another very practical book, discussing such issues as compilers, linking, and interrupt latency. The book contains an extensive example of a pilot control panel.

Simon [38] is more comprehensive than Barr, speaking of RTOSes.

Burns and Wellings [14] is an academic text aimed at graduate students.

Grehan and Cyliax [25] talks more about RTOSes.

Ganssle [24] is a broad survey, covering issues such as which tools to buy. Probably fairly dated by now.

Wolf's textbook [41] is aimed at undergraduates.

Bentham [5] talks about implementing TCP/IP, both for "normal" systems and finally an incredibly stripped-down version that runs on a tiny 8-bit PIC microcontroller.

Thomas and Moorby [40] is the standard reference on Verilog, a widely-used language for modeling and specifying digital hardware.

Ellsberger et al. [19] is the most readable book on SDL, a graphical language used mostly in Europe to describe telecommunication protocols.

The first two chapters of Thoen and Catthoor [39] give a reasonable overview of some embedded systems issues. The rest of the book is devoted to their Petri-net-like model for embedded software.

Gajski et al. [21] resembles Thoen and Catthoor [39] in that the early chapters are a reasonable survey of what's going on in the field. The rest describe their particular little-used modeling language. A later book [22] describes another of their hardware/software modeling languages.

Balarin et al. [3] is a complete reference on POLIS, an academic tool designed mostly for the synthesis of automotive controllers that laid the foundation for Cadence's commercial VCC tool.

Gallmeister [23] describes the POSIX.4 standard, the real-time extensions to the Unix-centric POSIX standards. It's rather a heavyweight interface, not

clearly useful for all applications, but gives some insight into some things found in RTOSes.

Rubini [36] describes how to write Linux device drivers. Most embedded systems both use existing and require new device drivers of some sort.

Shaw [37] focuses on real-time systems, discussing issues such as scheduling, RTOSes, clock distribution, and execution time prediction. His motivating example is an air-traffic control system.

Labrosse [31] describes his MicroC/OS-II RTOS in excruciating detail. If you ever wondered how to implement a preemptive priority-based scheduler, this is the book to read.

2 Periodicals

Circuit Cellar magazine (www.circuitcellar.com) is a monthly magazine containing hobbyist projects that are usually embedded systems-like. One problem: they speak mostly about the design of the hardware and assume that you'll just go and download the software.

Embedded Systems Programming (www.embedded.com) is a trade magazine for embedded systems developers. It usually has some lightweight discussions of programming, real-time issues, and whatnot. Its view of embedded systems is off-the-shelf single-board computers running an RTOS.

Kluwer publishes Design Automation for Embedded Systems, a scholarly journal on embedded systems issues.

3 Companies

Wind River Systems (www.windriver.com) is the main supplier of RTOSes (Vx-Works) and IDE and development tools surrounding it.

TI (www.ti.com) is the leading supplier of DSPs.

Motorola (www.motorola.com) is another big supplier of embedded microprocessors, such as the 68000 series.

4 Papers

General surveys [15, 18]. An RTOS survey [34].

Polis-related: Verifying a CFSM network [2]. Synthesizing software from CFSMs [17, 1]. The shock-absorber example [16].

Synthesizing dataflow graphs [6, 11, 7, 9, 10, 8].

The El Greco project, which turned into Synopsys' CoCentric System Studio tool for modeling dataflow and control [13].

The multi-language approach [20].

Edward's view of what should be happening [32, 33].

Performance estimation [35].

Hermann Kopetz has long been promoting his Time-Triggered Protocol for communications within such real-time systems as cars. He's publishes extensively on the idea. A broad survey: [27]. The philosophy: [28, 29]. How to synchronize the clocks in TTP: [30]. Modeling time: [26].

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