

WHAT IS AN EMBEDDED SYSTEM?

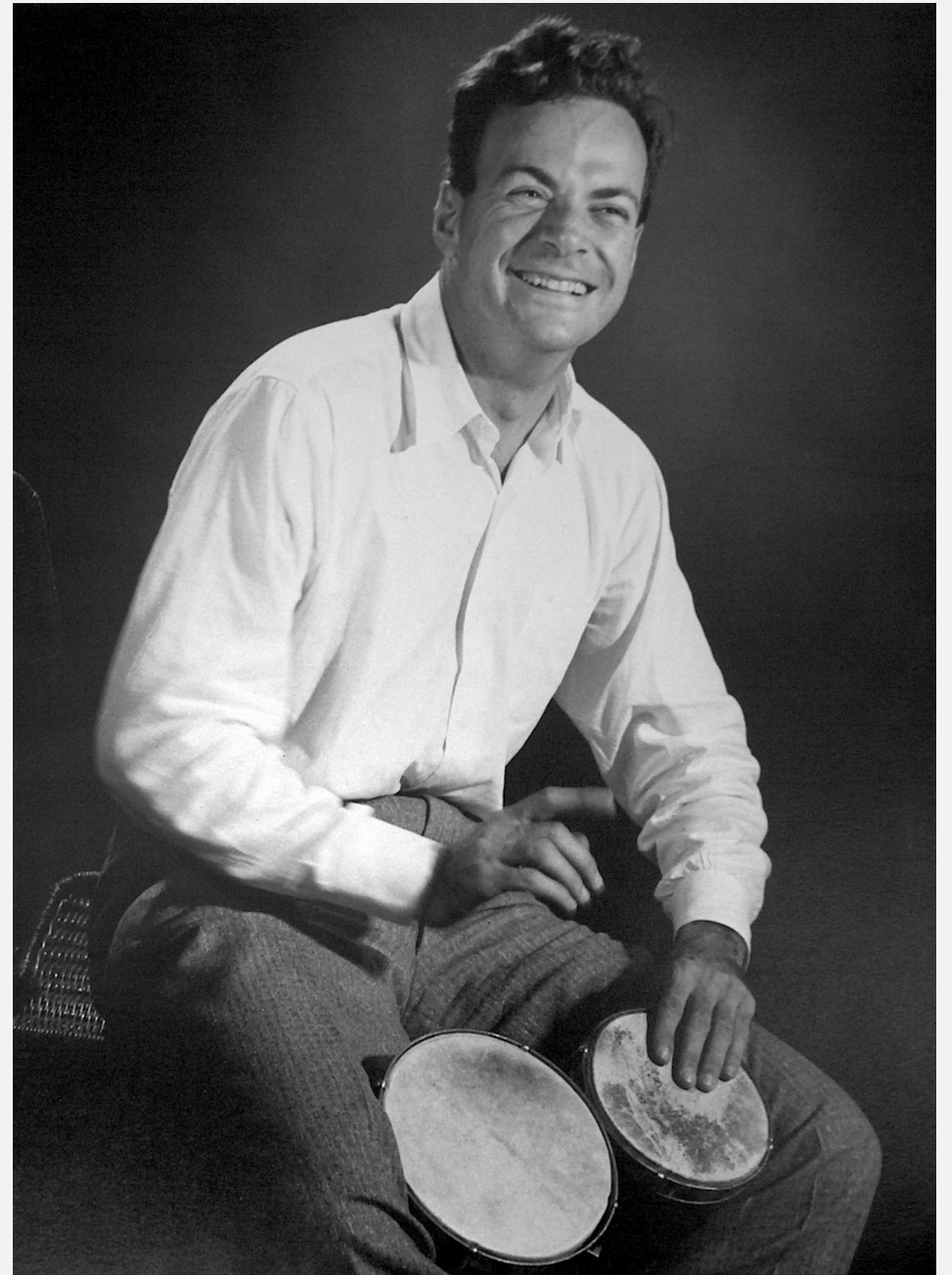
WIKIPEDIA

An embedded system is a computer system, this is, a combination of a computer processor, computer memory, and input/output peripheral devices, that has a dedicated function within a larger mechanical or electronic system.

CHAT GPT (GPT3.5)

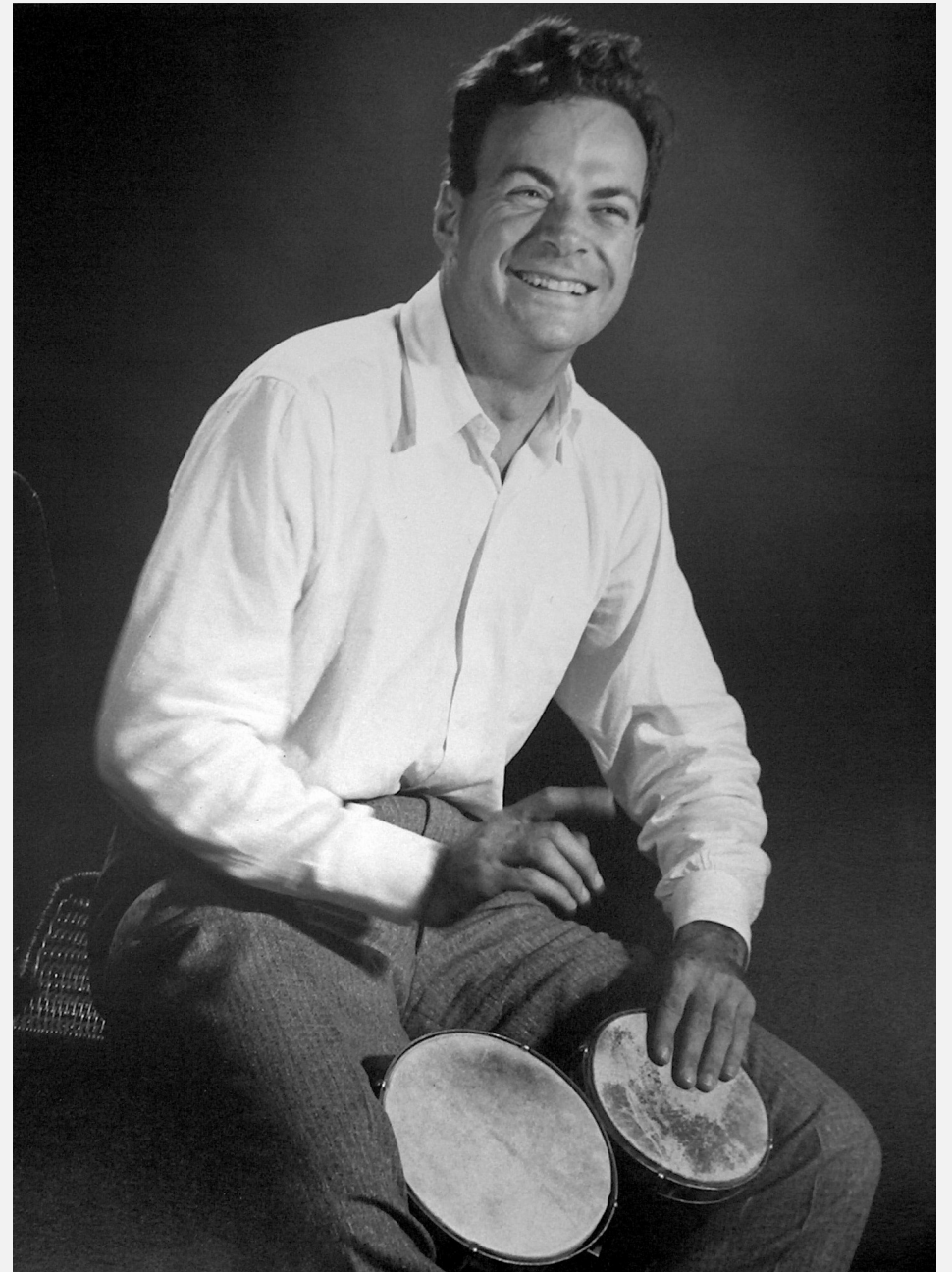
An embedded system is a specialized computing system that is dedicated to performing specific functions within a larger system or product. Unlike general-purpose computers, which are designed to run a variety of applications, embedded systems are built to execute a set of predefined tasks or functions.

PRESENTING



RICHARD FEYNMAN

Nobel physics laureate, bongo player,
funny, charismatic and one of the
greatest teachers in history.



FEYNMAN-IZE

- How would you explain something to a kid?
- Divide and conquer

MODERN EMBEDDED SYSTEMS

By its nature, usually employ
microcontrollers, but there are
alternatives.

When do we use those and why?

- Microprocessors
- Digital Signal Processors (DSPs),
- Field-Programmable Gate Arrays (FPGAs)
- Application-Specific Integrated Circuits (ASICs)
- System-on-Chip (SoCs):
- Programmable Logic Controllers (PLCs)
- Single-Board Computers (SBCs)

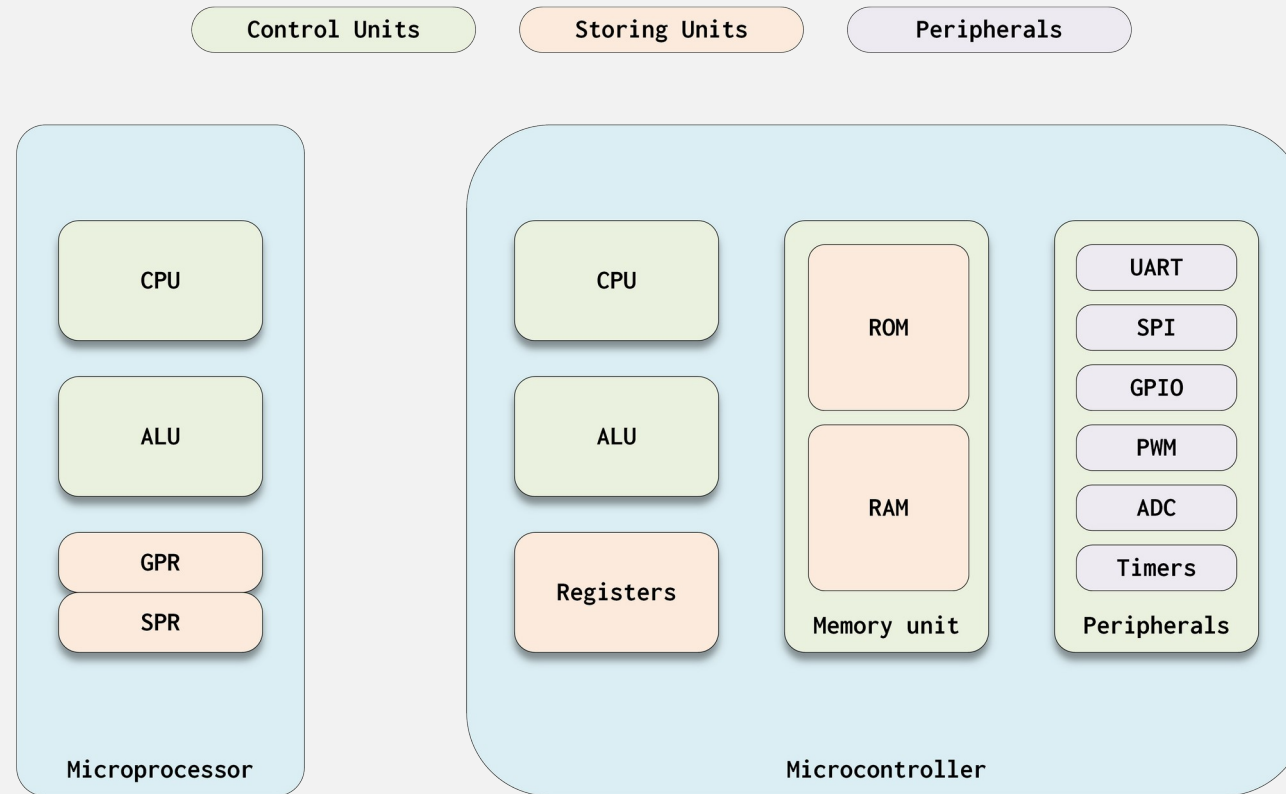
INTRO TO MICROCONTROLLERS

Daniel Martínez

I7266 - Programación de Sistemas Embebidos

WHAT IS A MICROCONTROLLER?

MICROCONTROLLER VS MICROPROCESSOR



THE BIG COMPANY ANALOGY

EXECUTIVE BOARD

HR DEPARTMENT

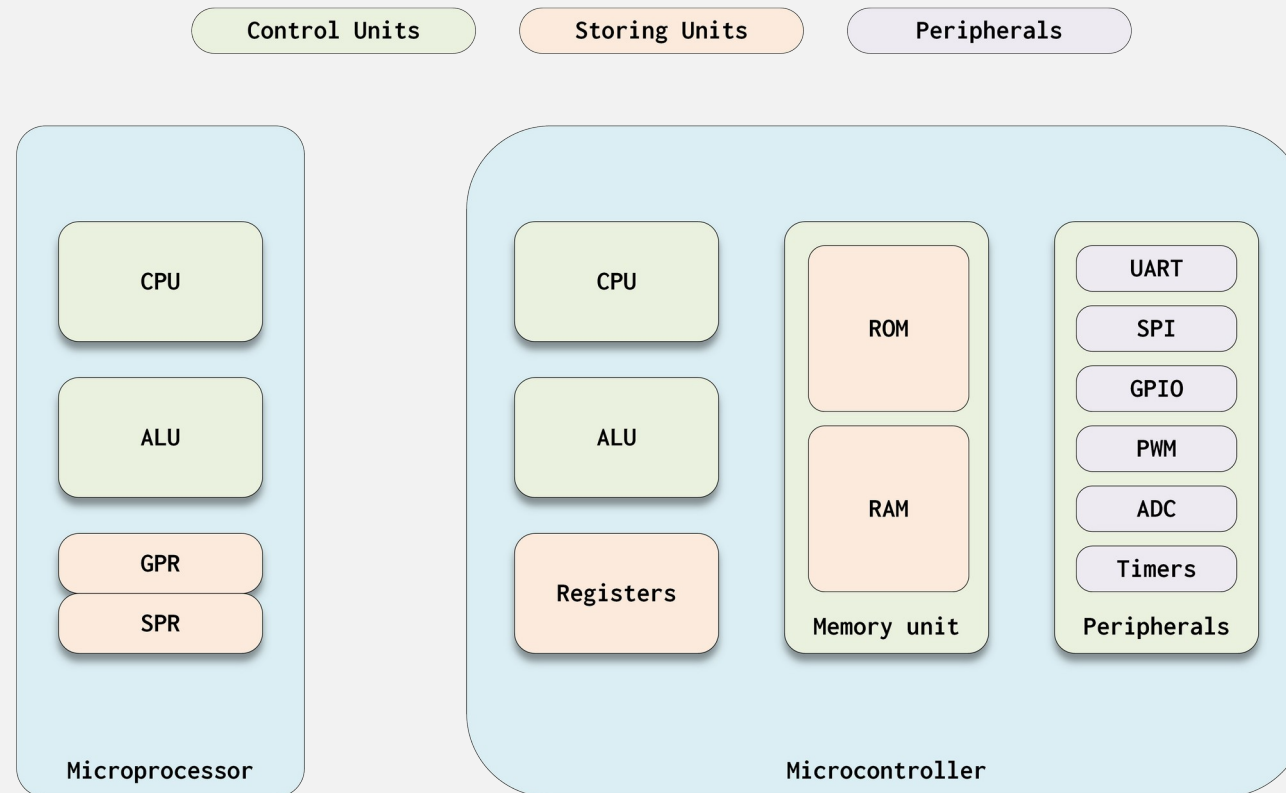
ACCOUNTABILITY & FINANCE

ARCHIVE

EXTERNAL RELATIONS

IT DEPARTMENT

MICROCONTROLLER VS MICROPROCESSOR



MICROCONTROLLER ARCHITECTURE

DISCLAIMER!

There are many types of architectures, or many ways of organizing stuff that we usually group by the name “architecture”, this can include:

- Instruction Set Architecture (ISA)
- Processor Architecture
- Memory Hierarchy
- Input/Output Architecture
- System Bus and Interconnection Networks
- Network Architecture
- Security Architecture
- Parallelism and Concurrency
- Power and Energy Management

VON NEUMANN ARCHITECTURE

HARVARD ARCHITECTURE

ARCHITECTURES IN USE

WHAT IS A MICROCONTROLLER?

What do I care about in a microcontroller and why?

WHAT IS AN EMBEDDED SYSTEM?

What do I care about in embedded systems and why?