



VILNIAUS UNIVERSITETAS  
MATEMATIKOS IR INFORMATIKOS FAKULTETAS  
INFORMATIKOS STUDIJŲ PROGRAMA

Report

# **Comparison of two computer architectures**

## **Motorola 68HC11 vs. Intel i960**

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## **ELEMENTARY BASE OF THE PROCESSOR**

### **Intel i960**

The Intel 80C186/188 family microprocessors were introduced in the early to mid-1980s and represent a generation well beyond simple transistor or discrete component designs. By this time, processors were fabricated using advanced CMOS semiconductor processes. The 80C186/188 series integrated not just a 16-bit CPU but also peripherals such as timers, interrupts, and bus controllers onto the same silicon chip.

This level of complexity, packing tens of thousands of transistors (typical for that era), classified them under LSI (Large Scale Integration) technology. They were modern microprocessors for their time, realized as a single integrated circuit.

### **Motorola 68HC11**

Motorola 68HC11 family devices combine a CPU, memory (EEPROM/EPROM, RAM), and peripherals (serial interfaces, timers, I/O ports) on a single chip. They were also fabricated using CMOS technology.

Like the Intel parts of the same era, the 68HC11 family represented a high level of integration, but at an 8-bit scale. With integrated peripherals and memory on-chip, the transistor count and complexity placed them firmly in the LSI range, possibly bordering on early VLSI territory. Compared to earlier generations of electronics that required multiple separate chips, the 68HC11 provided a complete computing system in a single IC.

## **PHYSICAL CHARACTERISTICS**

### **Intel i960**

These processors came in various standard packages. These packages typically measured a few centimeters on a side and weighed only a few grams. Their power consumption was relatively low—on the order of milliwatts to a few hundred milliwatts. No elaborate cooling solutions were needed.

### **Motorola 68HC11**

These microcontrollers were packaged in standard IC packages, each only a few centimeters across and weighing just a few grams. Like the Intel device, these microcontrollers drew relatively little power—on the order of milliamps of current at

typical supply voltages—resulting in very low power dissipation.

#### **SUMMARY:**

- **Elementary Base:**

- **Intel i960:** A 16-bit microprocessor, CMOS-based, considered LSI-level integration for its time.
- **Motorola 68HC11:** An 8-bit microcontroller, also CMOS-based with LSI integration (CPU, memory, and peripherals on one chip).

- **Physical Characteristics:**

- Both were small, light integrated circuits in standard IC packages. They consumed relatively little power and did not require complex cooling solutions.