

# Control systems and Computer Networks

## Embedded and Networked Systems

Dr Alun Moon

Lecture 1.1

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- ▶ **Networked** communicates with other devices and computers to co-ordinate actions and distribute the workload.

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- ▶ Challenging, demanding, fun, & very satisfying to work on

# Jacquard Loom

Early industrial automation



- ▶ Punched Cards controlling loom
- ▶ 1804
- ▶ manufacturing textiles with such complex patterns as brocade, damask and matelassé

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## examples

- ▶ More than 86 billion ARM®-based chips shipped to date.
- ▶ Microchip – PIC and AVR (ATmega in Arduino)

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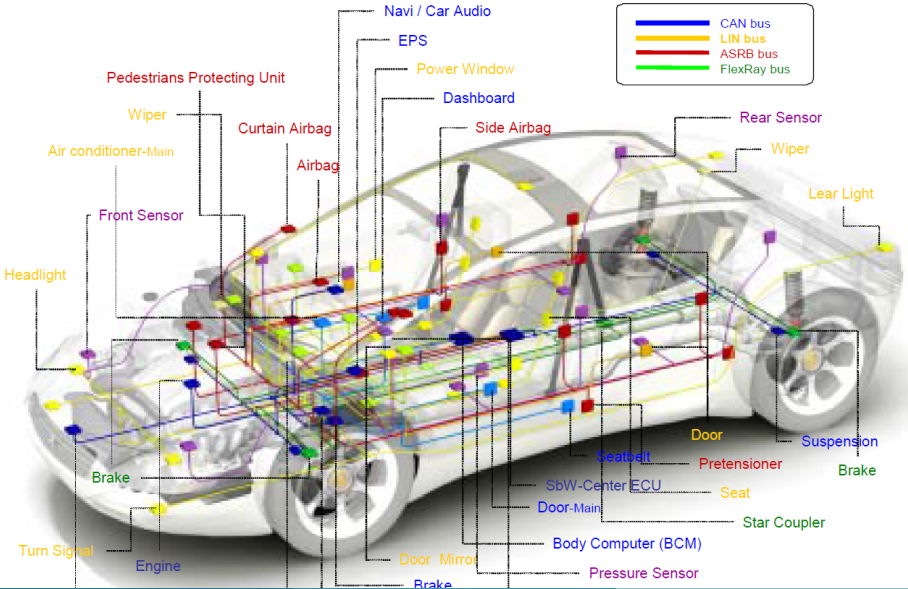


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  - Apollo 11, 1201 and 1202 alarms
- ▶ May be the first “networked” embedded system

# Modern Network of systems



# Control

- ▶ Deal with physical signals

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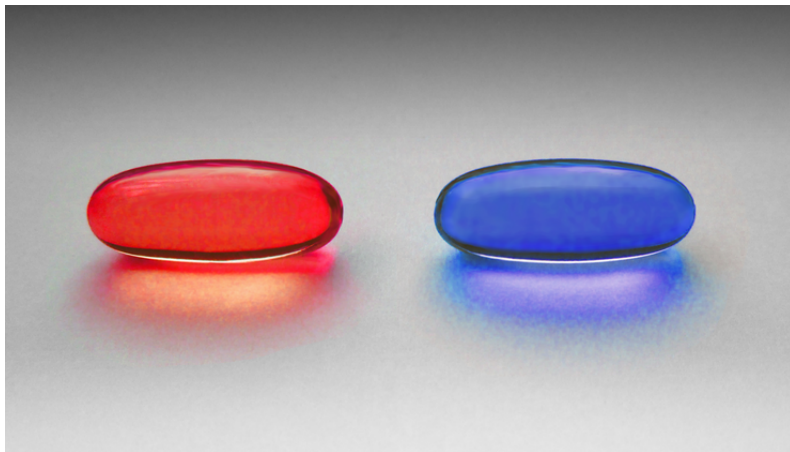
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- ▶ Virtual Reality

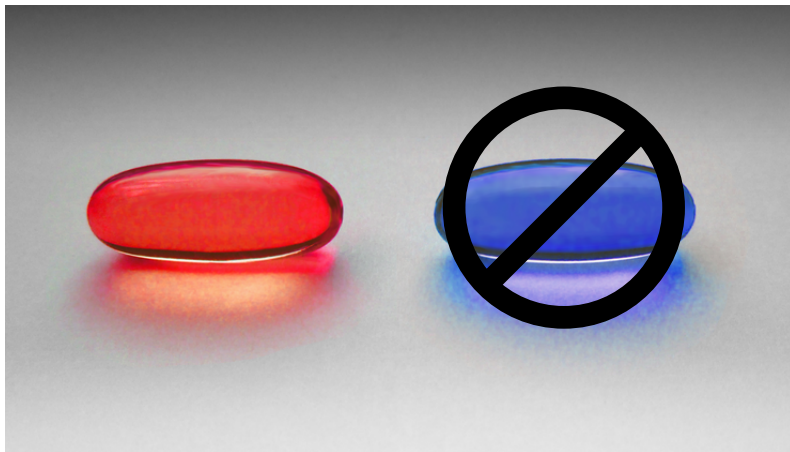
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- ▶ ~~Virtual~~ Reality

# We Deal with Reality



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*You take the red pill – you stay in Wonderland, and I show you how deep the rabbit hole goes.*

*Morpheus, The Matrix*