



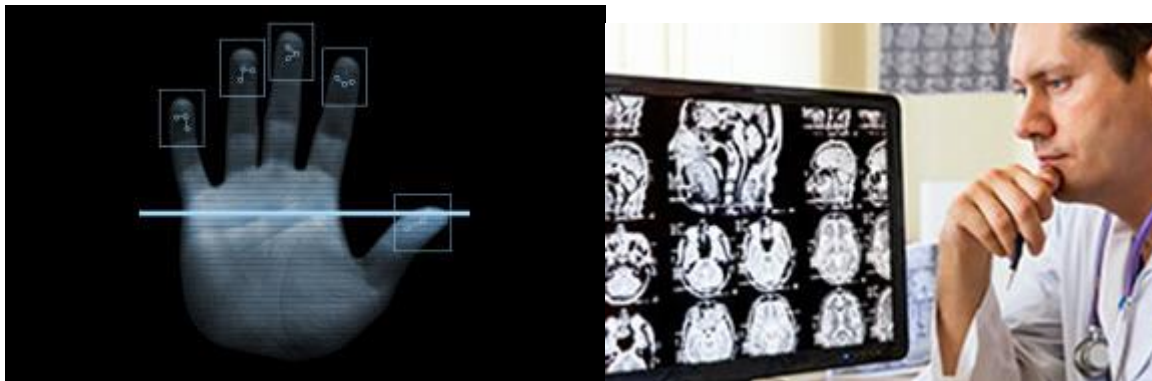
DSP Concepts

Digital Signal Processing



Applications for Digital Signal Processors

- Automation & Process Control
- Automotive & Transportation
- Communications & Telecom
- Consumer & Portable Electronics
- Health Tech
- Security & Safety
- Avionics & Defense





DSP processors

DSP processors

- A DSP is a specialized processor that does signal processing very efficiently. (consume less time, energy and power than a general-purpose microprocessor when carrying out signal processing tasks)



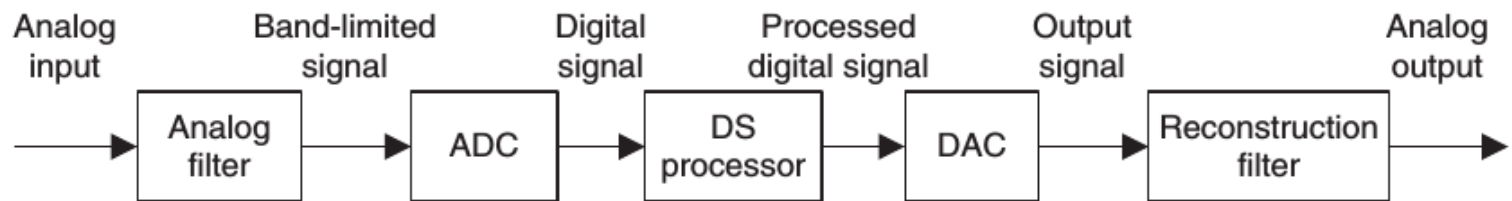
DSP processors can do...

- Digital audio or video
- Digital recording
- CD, DVD, and MP3 players
- Digital cameras
- Digital and cellular telephones
- Digital satellite and TV
- Wire and wireless networks.

DSP processor features

- Real-time digital signal processing capabilities.
- High throughput.
- Deterministic operation.
- Re-programmability by software.
- Fast math computations

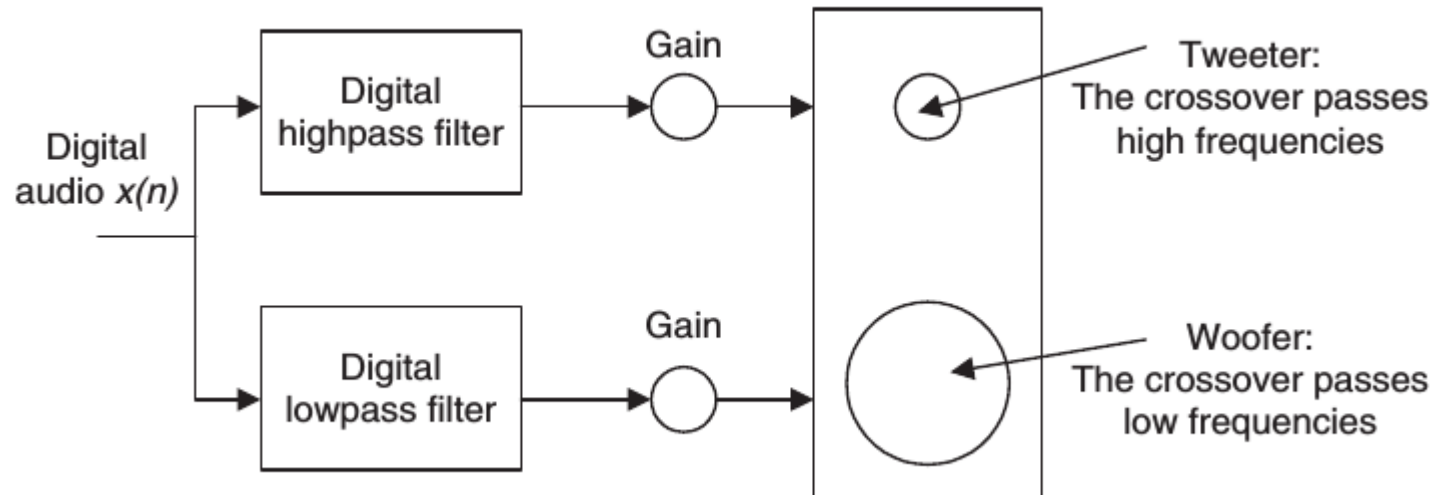
DSP system



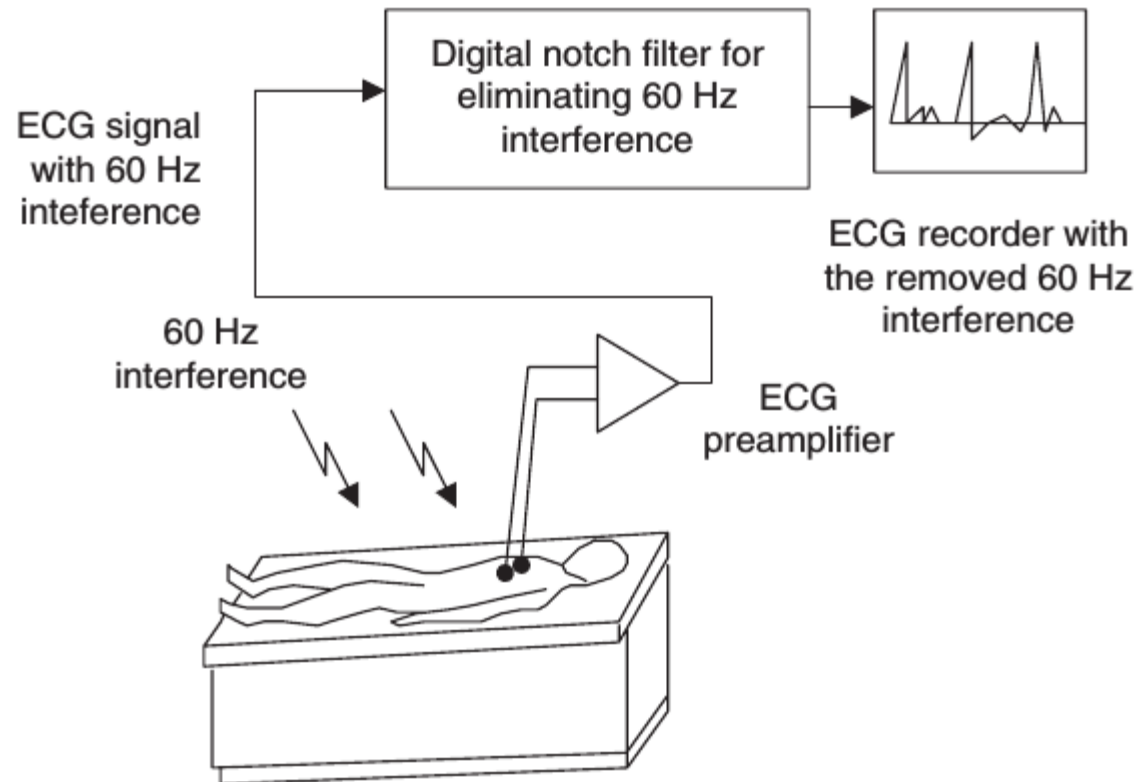


● DSP real world examples

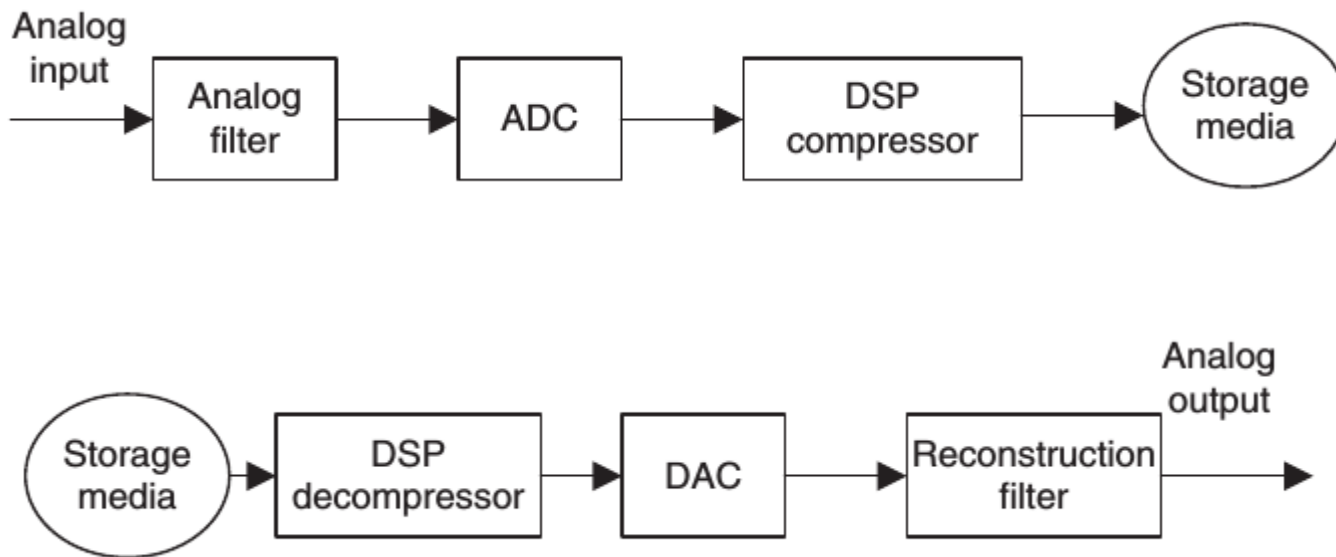
Digital Crossover Audio System



Interference Cancellation in Electrocardiography



Speech Coding and Compression



Digital Photo Image Enhancement

Original image



A

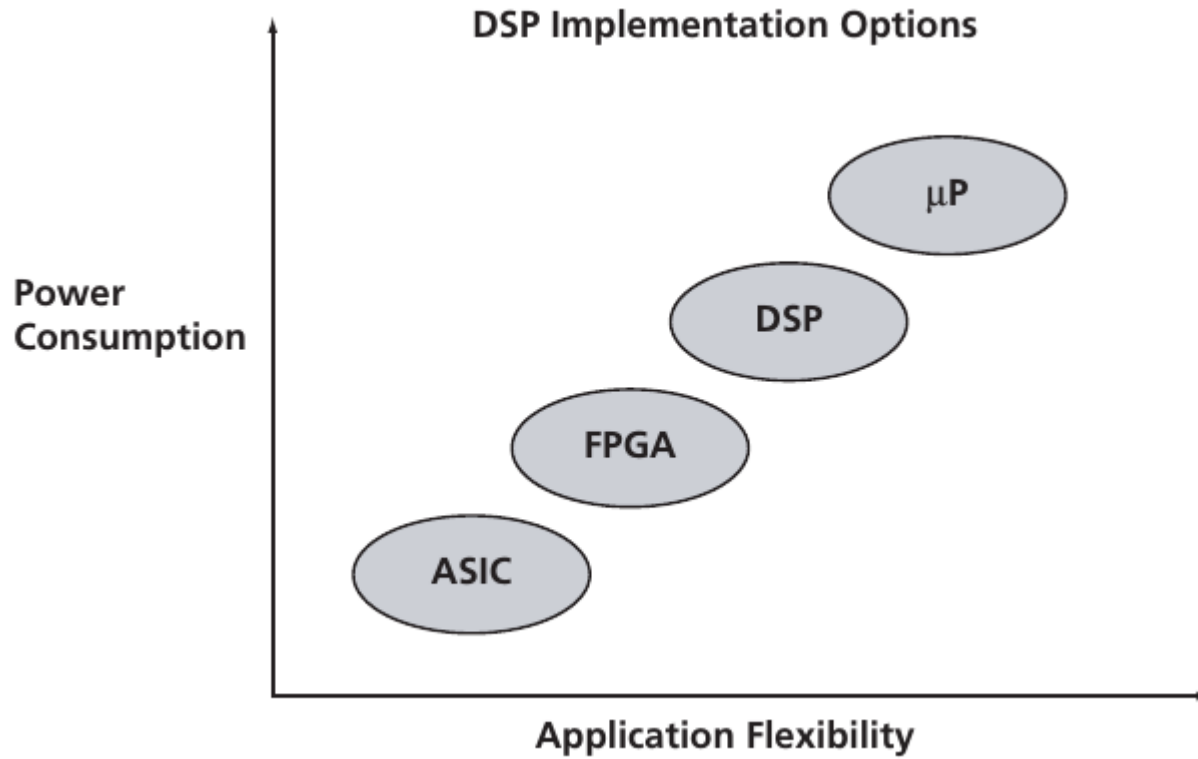
Enhanced image



B



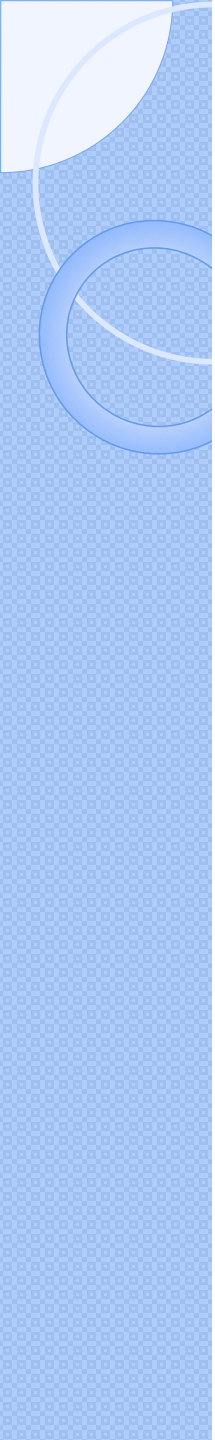
● DSP implementation



ASIC (application-specific integrated circuit)



● **Analog vs digital**

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- Changeability
 - Repeatability
 - Size, weight, and power

Tarea

- DSP history
- DSP Manufacturers