

Signal processing

معالجة الاشارة

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هدف المقرر

- التعريف بالمفاهيم والمبادئ الأساسية المتعلقة بعمليات معالجة الإشارة.
- دور الحاسب في معالجة الإشارات الرقمية في التطبيقات الهندسية المختلفة وطرق استحصالها و رقمتها
- أنواع و خصائص الإشارات و كيفية تمثيلها و نمذجتها و العلاقة مع الزمن و التردد
- تسليط الضوء على أهم تطبيقات معالجة الإشارة في مجال معالجة الصوت و الصورة

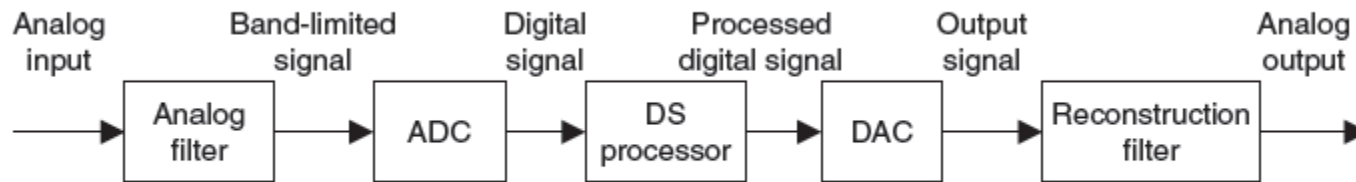
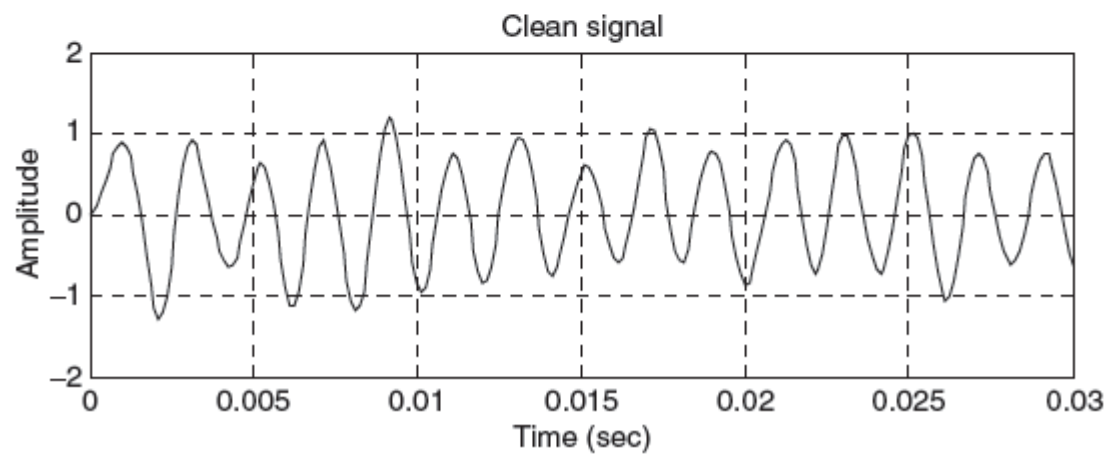
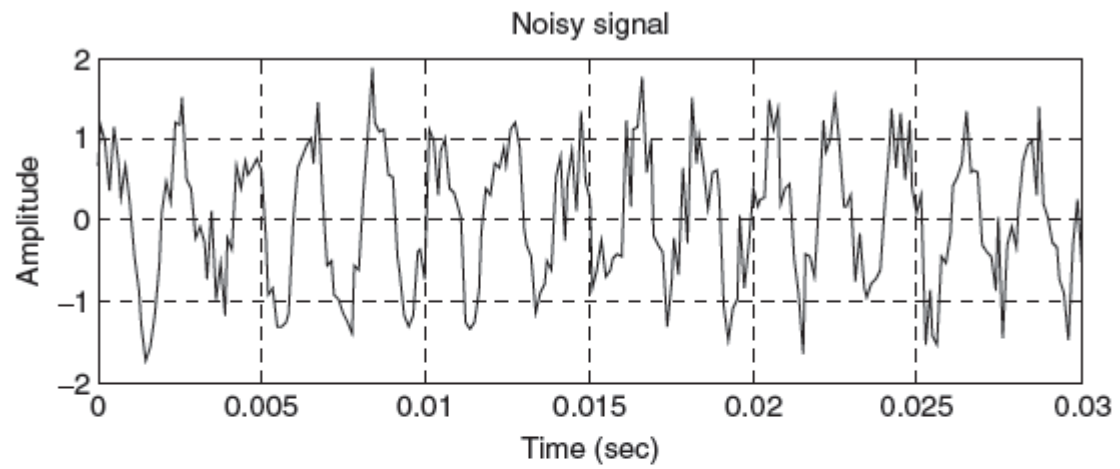


FIGURE 1.1 A digital signal processing scheme.

Basic Digital Signal Processing Examples in Block Diagrams

Digital Filtering





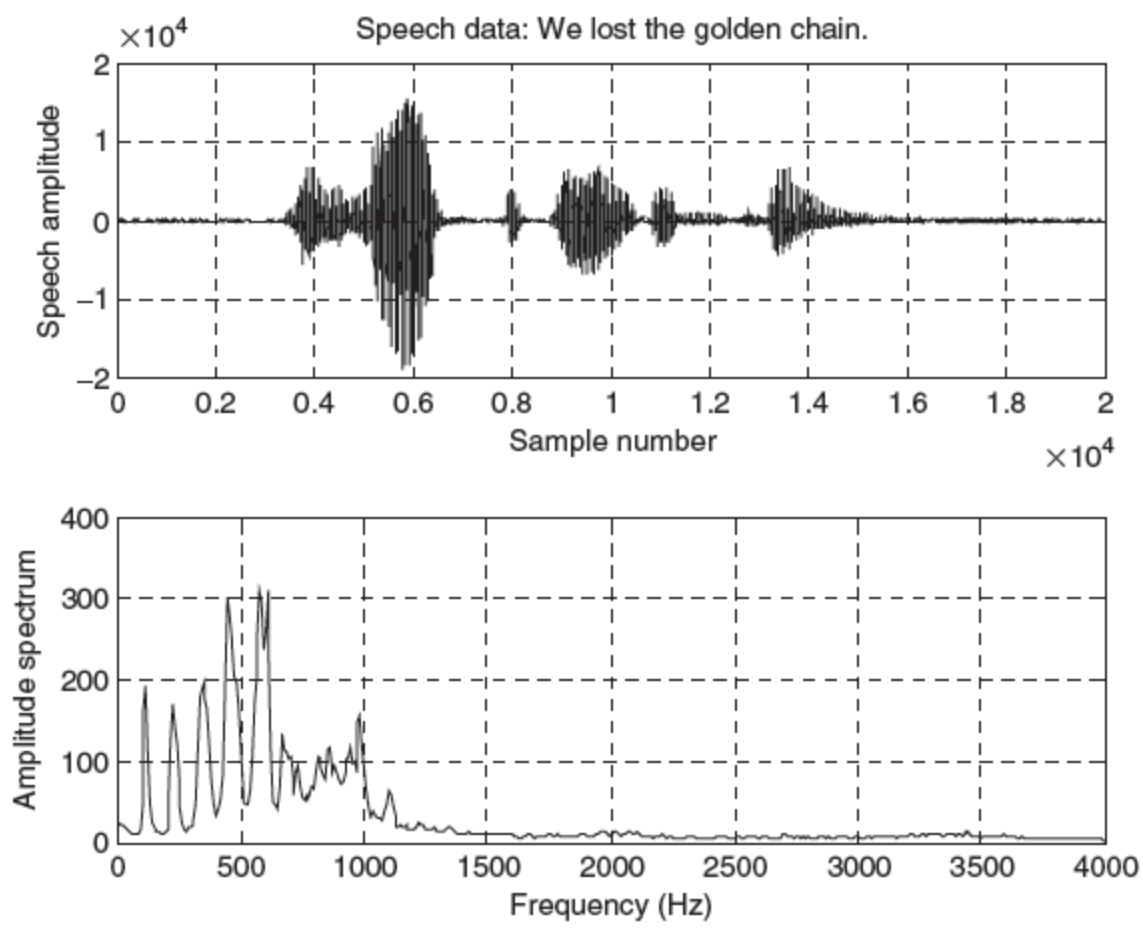
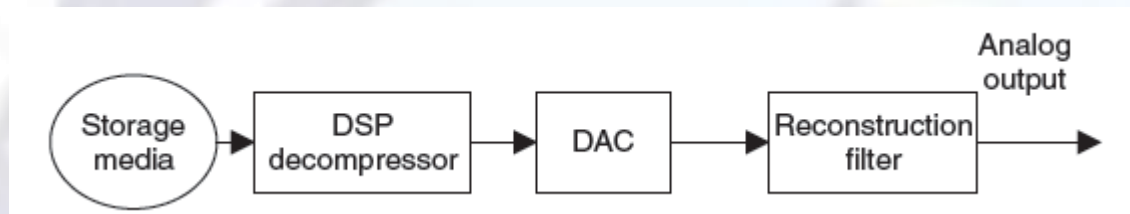
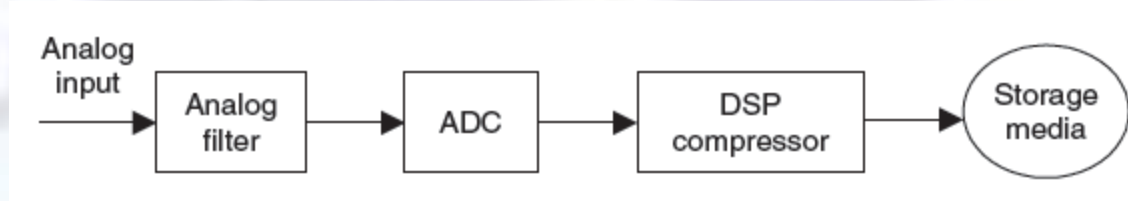
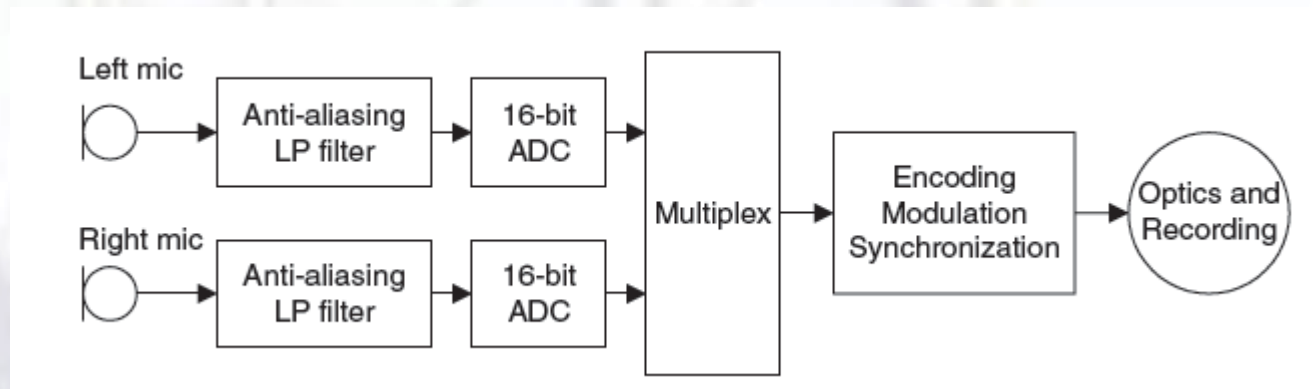


FIGURE 1.6 Speech sample and speech spectrum.

Speech Coding and Compression



Compact-Disc Recording System



Digital Photo Image Enhancement

Original image



A

Enhanced image



B

TABLE 1.1 Applications of digital signal processing.

Digital audio and speech	Digital audio coding such as CD players, digital crossover, digital audio equalizers, digital stereo and surround sound, noise reduction systems, speech coding, data compression and encryption, speech synthesis and speech recognition
Digital telephone	Speech recognition, high-speed modems, echo cancellation, speech synthesizers, DTMF (dual-tone multifrequency) generation and detection, answering machines
Automobile industry	Active noise control systems, active suspension systems, digital audio and radio, digital controls
Electronic communications	Cellular phones, digital telecommunications, wireless LAN (local area networking), satellite communications
Medical imaging equipment	ECG analyzers, cardiac monitoring, medical imaging and image recognition, digital x-rays and image processing
Multimedia	Internet phones, audio, and video; hard disk drive electronics; digital pictures; digital cameras; text-to-voice and voice-to-text technologies
