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slides can be viewed at:
http://www.seas.smu.edu/~cd/ee5345.html
CT Scanner

courtesy of Siemens AG
CT Scanner (cont.)

courtesy of Siemens AG
Anger Camera

courtesy of Siemens AG
Biomedical Data Compression Methods

- Holter Monitors
- Electrocardiogram Compression Methods
- Medical Image Compression
Compression of ECG Signals

- Patient
- IA
- A/D
- DSP
- Data compression
- Modulator & transmitter
- Telemetry transmitter
- Data encoding
- Mass storage
- Telephone line

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Motivation for ECG Compression

- Increased storage capacity for archival purposes.
- Allows real-time transmission of ECG’s over telephone networks (sometimes necessary for pacemaker patients).
- Economic off-line transmission to remote interpretation site.
- Enables efficient ECG rhythm analysis algorithms.
- Improved ambulatory (Holter) monitor systems.
Holter Monitors

- Holter monitor worn on belt, records ECG continuously for up to 30 days using a patient cable and electrodes.
- ECG is stored in memory for later telephone-line transmission to an analysis center.
- System is used for evaluating syncopal episodes or other symptomatic events which are too infrequent or brief to be captured by conventional methods.
Typical Holter Monitor

courtesy of Telescan
ECG Compression Algorithms

- Turning Point Algorithm
- Fan Algorithm
- Aztec Algorithm
- Delta Modulation
- Sub-band and wavelet coding
- Huffman coding