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6.7 The PIC16F877 microcontroller 6.8 Interfacing to the PIC; 6.9 Communicating with the PIC during programming; Problems; Further reading; Chapter 7: Data acquisition; 7.1 Introduction; 7.2 Sampling and aliasing; 7.3 Quantization theory; 7.4 Digital-to-analog conversion hardware; 7.5 Analog-to-digital conversion hardware; Problems; Further reading; Chapter 8: Sensors; 8.1 Introduction; 8.2 Distance sensors; 8.3 Movement sensors; 8.4 Proximity sensors; 8.5 Electrical strain and stress measurement; 8.6 Force measurement; 8.7 Time of flight sensors; 8.8 Binary force sensors
8.9 Temperature measurement 8.10 Pressure measurement; Problems; Further reading; Internet resources; Chapter 9: Electrical actuator systems; 9.1 Introduction; 9.2 Moving-iron transducers; 9.3 Solenoids; 9.4 Relays; 9.5 Electric motors; 9.6 Direct current motors; 9.7 Dynamic model and control of d.c. motors; 9.8 The servo motor; 9.9 The stepper motor; 9.10 Motor selection; Problems; Further reading; Internet resources; Chapter 10: Mechanical actuator systems; 10.1 Hydraulic and pneumatic systems; 10.2 Mechanical elements; 10.3 Kinematic chains; 10.4 Cam mechanisms; 10.5 Gears
10.6 Ratchet mechanisms

Sommario/riassunto

Mechatronics is a core subject for engineers, combining elements of mechanical and electronic engineering into the development of computer-controlled mechanical devices such as DVD players or anti-lock braking systems. This book is the most comprehensive text available for both mechanical and electrical engineering students and will enable them to engage fully with all stages of mechatronic system design. It offers broader and more integrated coverage than other books in the field with practical examples, case studies and exercises throughout and an Instructor's Manual. A further key feature