IEEE Taxonomy: A Subset Hierarchical Display of IEEE Thesaurus Terms

The IEEE Taxonomy comprises the first three hierarchical 'levels' under each term-family (or branch) that is formed from the top-most terms of the IEEE Thesaurus. In this document these term-families are arranged alphabetically and denoted by **boldface** type. Each term family's hierarchy goes to no more than three sublevels, denoted by indents (in groups of four dots) preceding the next level terms. A term can appear in more than one hierarchical branch and can appear more than once in any particular hierarchy. The IEEE Taxonomy is defined in this way so that it is always a subset of the 2023 IEEE Thesaurus.

**Aerospace and electronic systems**

...Aerospace control
......Air traffic control
......Attitude control
......Ground support
...Aerospace engineering
......Aerospace biophysics
......Aerospace electronics
......Aerospace safety
.......Air safety
......Aerospace simulation
......Aerospace testing
.......Wind tunnels
......Artificial satellites
..........Earth Observing System
..........Low earth orbit satellites
..........Military satellites
.......Space stations
......Space technology
.........Payloads
.........Space debris
.........Space exploration
...Aerospace materials
......Aerospace components
...Aircraft manufacture
...Aircraft navigation
...Aircraft propulsion
......Propellers
...Command and control systems
...Electronic warfare
......Electronic countermeasures
.......Jamming
......Radar countermeasures
...Military equipment
...Military aircraft
.........Payloads
...Military satellites
...Military vehicles
......Weapons

...............Biological weapons
...............Chemical weapons
...............Guns
...............Missiles
...............Nuclear weapons
...............Projectiles
...............Weapons of mass destruction
.......Sensor systems
............Activity recognition
...............Human activity recognition
............Gunshot detection systems

...Sonar
.........Sonar applications
.........Sonar detection
...............Sonar measurements
...............Sonar equipment
...............Synthetic aperture sonar
.......Telemetry
............Biomedical telemetry

**Antennas and propagation**

...Antennas
.........Antenna accessories
..........Radomes
............Antenna arrays
.........Adaptive arrays
..........Butler matrices
.........Linear antenna arrays
.........Log periodic antennas
............Microstrip antenna arrays
............Microwave antenna arrays
.........Phased arrays
............Planar arrays
............Antenna radiation patterns
.........Near-field radiation pattern

............Antenna theory
.........Frequency selective surfaces
.........Apertures
............Aperture antennas
Aperture coupled antennas  
Broadband antennas  
Ultra wideband antennas  
Vivaldi antennas  
Dielectric resonator antennas  
Dipole antennas  
Directional antennas  
Directive antennas  
Feeds  
Antenna feeds  
Fractal antennas  
Helical antennas  
Horn antennas  
Leaky wave antennas  
Loaded antennas  
Log-periodic dipole antennas  
Microstrip antennas  
Microwave antennas  
Mobile antennas  
Multifrequency antennas  
Omnidirectional antennas  
Patch antennas  
Radar antennas  
Receiving antennas  
Rectennas  
Reflector antennas  
Satellite antennas  
Slot antennas  
Steerable antennas  
Transmission line antennas  
Transmitting antennas  
UHF antennas  
Yagi-Uda antennas  
Electromagnetic propagation  
Electromagnetic diffraction  
Optical diffraction  
Physical theory of diffraction  
X-ray diffraction  
Electromagnetic propagation in absorbing media  
Electromagnetic reflection  
Optical reflection  
Microwave propagation  
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Optical surface waves  
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Propagation constant  
Propagation losses  
Radio propagation  
Radiowave propagation  
NVIS  
Submillimeter wave propagation  
UHF propagation  
Radio astronomy  

Broadcast technology  
Broadcasting  
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Digital audio players  
Digital Radio Mondiale  
Digital multimedia broadcasting  
Digital video broadcasting  
Motion pictures  
NVIS  
Radio broadcasting  
Frequency modulation  
Radio networks  
Satellite broadcasting  
Web TV  

Circuits and systems  
Circuits  
Active circuits  
Active inductors  
Gyrators  
Operational amplifiers  
Adders  
Analog circuits  
Analog integrated circuits  
Analog processing circuits  
Application specific integrated circuits  
System-on-chip  
Asynchronous circuits  
Bipolar transistor circuits  
BiCMOS integrated circuits  
Bipolar integrated circuits  
Bistable circuits  
Latches  
Bridge circuits  
Charge pumps  
Circuit analysis  
Circuit analysis computing  
Coupled mode analysis  
Nonlinear network analysis  
Circuit faults  
Electrical fault detection  
Circuit noise  
Thermal noise  
Circuit simulation
Circuit synthesis
High level synthesis
Integrated circuit synthesis
Coprocessors
Counting circuits
Coupling circuits
Digital circuits
Circuit topology
Digital integrated circuits
Digital signal processors
Distributed parameter circuits
Driver circuits
Electronic circuits
Breadboard
Central Processing Unit
Multivibrators
Stripboard circuit
Equivalents circuits
Feedback
Feedback circuits
Negative feedback
Neurofeedback
Hybrid integrated circuits
Integrated circuits
Analog integrated circuits
Analog-digital integrated circuits
Application specific integrated circuits
CMOS integrated circuits
Coprocessors
Current-mode circuits
Digital integrated circuits
FET integrated circuits
Field programmable gate arrays
Hybrid integrated circuits
Integrated circuit interconnections
Integrated circuit modeling
Integrated circuit noise
Integrated circuit synthesis
Large scale integration
MESFET integrated circuits
Microprocessors
Microwave integrated circuits
Millimeter wave integrated circuits
Monolithic integrated circuits
Photonic integrated circuits
Power integrated circuits
Radiofrequency integrated circuits
Submillimeter wave integrated circuits
Superconducting integrated circuits
Thick film circuits
Thin film circuits
Three-dimensional integrated circuits
Through-silicon vias
UHF integrated circuits
Ultra large scale integration
Very high speed integrated circuits
Very large scale integration
Wafer scale integration
Isolators
Large scale integration
Ultra large scale integration
Very large scale integration
Wafer scale integration
Linear circuits
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MOS integrated circuits
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Multiplying circuits
Neural circuits
Nonlinear circuits
Nonlinear network analysis
Passive circuits
Phase shifters
Phase transformers
Power dissipation
Power integrated circuits
Printed circuits
Flexible printed circuits
Memory modules
Surface mount technology
Programmable circuits
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Programmable logic arrays
Programmable logic devices
Programmable logic arrays
Programmable logic devices
Pulse circuits
Flip-flops
Quantum circuit
Radiation detector circuits
Rail to rail operation
Rail to rail amplifiers
Rail to rail inputs
Rail to rail outputs
Rectifiers
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Sampled data circuits
Sequential circuits
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Silicon on sapphire
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Submillimeter wave integrated circuits
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Switched circuits
Switched capacitor circuits
Switching circuits
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Logic circuits
Switching converters
Zero current switching
Zero voltage switching
Thick film circuits
Thin film circuits
Thyristor circuits
Time varying circuits
Trigger circuits
UHF circuits
UHF integrated circuits
UHF integrated circuits
Ultra large scale integration
Very large scale integration
Neuromorphics
VHF circuits
Voltage multipliers
Capacitors
Diodes
Wafer scale integration
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Brushes
Contact resistance
Ohmic contacts
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Active filters
Anisotropic
Bragg gratings
Channel bank filters
Comb filters
Digital filters
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Filtering theory
Gabor filters
Harmonic filters
IIR filters
Kalman filters
Low-pass filters
Matched filters
Microstrip filters
Nonlinear filters
Notch filters
Particle filters
Power filters
Resonator filters
Spatial filters
Superconducting filters
Transversal filters
Information filtering
Information filters
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Beyond CMOS
CMOS technology
CMOS process
Silicon on sapphire
Moore’s Law
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Logic gates
Programmable logic devices
Oscillators
Digital-controlled oscillators
Injection-locked oscillators
Local oscillators
Microwave oscillators
Phase noise
Ring oscillators
Voltage-controlled oscillators
...Single electron devices
......Single electron memory
.........Hetero-nanocrystal memory
......Single electron transistors
...Tunable circuits and devices
......RLC circuits
......Tuned circuits

Communications technology

......Communication equipment
........Auditory displays
........Codecs
...........Speech codecs
...........Video codecs
........Modems
........On board unit
........Optical communication equipment
...........Optical transmitters
........Radio communication equipment
...........Base stations
...........Ham radios
...........Land mobile radio equipment
...........Radio transceivers
...........Transponders
...........Receivers
...........Optical receivers
...........RAKE receivers
...........Receiving antennas
........Repeaters
...........Speech codecs
........Telephone equipment
...........Cellular phones
.................Landline
.................Telephone sets
.................Vocoders
...........Transceivers
...........Radio transceivers
........Transmitters
...........Auxiliary transmitters
...........Diversity methods
...........Neurotransmitters
...........Optical transmitters
........Radio transmitters
...........Transmitting antennas
........Transponders
........TV equipment
...........Large screen displays
...........TV receivers
...........Video codecs
........Video equipment

...........Optical projectors
...........Video codecs
...........Videos
...........Vocoders
...........Communication switching
...........Code division multiplexing
...........Electronic switching systems
...........Frame relay
...........Handover
...........Multiprotocol label switching
...........Packet switching
...........Burst switching
...........Frame relay
...........Multiprotocol label switching
...........Packet loss
...........Communication systems
...........ARPANET
...........Biomedical communication
...........Biomedical telemetry
...........Telemedicine
...........Broadband communication
...........B-ISDN
...........Broadband amplifiers
...........Communication networks
...........Central office
...........Cyberspace
...........Industrial communication
...........Maritime communications
...........Radio access technologies
...........Relay networks

(telecommunication)
...........Telecommunication network performance
...........Virtual links
...........Communication system control
...........Telecommunication control
...........Communication system security
...........Denial-of-service attack
...........Impersonation attacks
...........Quantum key distribution

...........Radio communication
countermeasures
...........Communication system signaling
...........Received signal strength indicator
...........Communication system software
...........Streaming media
...........Communication system traffic

...........Communication system traffic control
...........Computer networks
...........Ad hoc networks
...........Computer network management
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<th>Technology Area</th>
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Telecommunication network
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Telecommunication services
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Teleconferencing
Telegraphy
Telephony
Teleprinting
Teletext
Terahertz communications
Token networks
UHF communication
Underwater communication
Vehicle-to-everything
Vehicle-to-infrastructure
Video conferencing
Videophone systems
Videotex
Visual communication
Wide area networks
Low-power wide area networks
Wideband
Wireless communication
Cognitive radio
Cooperative communication
Dedicated short range
communication
GSM
Open wireless architecture
Point-to-multipoint communications
Roaming
Smart devices
Spatial diversity
WiMAX
Wireless access points
Wireless application protocol
Wireless networks
WRAN
Wireless mesh networks
Wireless sensor networks
Body sensor networks
Event detection
Couplers
Directional couplers
High-speed electronics
High-speed integrated circuits
High-speed networks
Ultrafast electronics
Image communication
Facsimile
Picture archiving and communication systems
Information and communication technology
Ambient assisted living
Message systems
Electronic mail
Unified messaging
Unsolicited e-mail
Electronic messaging
Instant messaging
Unified messaging
Postal services
Publish subscribe systems
Voice mail
Modulation
Amplitude modulation
Amplitude shift keying
Quadrature amplitude modulation
Chirp modulation
Demodulation
Digital modulation
Constellation diagram
Partial response signaling
Frequency modulation
Frequency shift keying
Magnetic modulators
Modulation coding
Interleaved codes
Optical modulation
Cross-phase modulation
Intensity modulation
Optical modulators
Electro-absorption modulators
2023 IEEE Taxonomy

Electro-optic modulators
Phase modulation
Continuous phase modulation
Cross-phase modulation
Differential phase shift keying
Phase shift keying
Pulse modulation
Pulse width modulation
Pulse width modulation inverters
Space vector pulse width modulation
Multiplexing
Code division multiplexing
Demultiplexing
Frequency division multiplexing
Layered division multiplexing
Multiplexing equipment
Add-drop multiplexers
OFDM
Multiple access interference
OFDM modulation
Partial transmit sequences
Peak to average power ratio
Space division multiplexing
Time division multiplexing
Wavelength division multiplexing
WDM networks
Network topology
Complex networks
Computer network reliability
Fault tolerant computer networks
Network architecture
Active networking
Information-centric networking
Network function virtualization
Network slicing
Presence network agents
TV
Analog TV
Cable TV
Must-carry regulations
Color TV
Digital TV
HDTV
IPTV
Mobile TV
Smart TV
Three-dimensional television
Web TV
UHF technology
UHF antennas
UHF circuits
UHF integrated circuits
UHF communication
UHF devices
Ultra wideband technology
Ultra wideband antennas
Ultra wideband communication
Ultra wideband radar
VHF devices

Components, packaging, and manufacturing technology

Component architectures
Electronic components
Capacitors
Ceramic capacitors
Power capacitors
Varactors
Coils
Superconducting coils
Connectors
Plugs
Sockets
Diodes
Active matrix organic light emitting diodes
Diode lasers
Light emitting diodes
Organic light emitting diodes
P-i-n diodes
Schottky diodes
Semiconductor lasers
Superluminescent diodes
Electrodes
Anodes
Cathodes
Microelectrodes
Fuses
Inductors
Active inductors
Thick film inductors
Thin film inductors
Resistors
Memristors
Switched capacitor networks
Varistors
Structural plates
Switches
Contactors
---Microswitches
---Optical switches
---Transducers
---Acoustic transducers
---Biomedical transducers
---Capacitive transducers
---Chemical transducers
---Inductive transducers
---Piezoelectric transducers
---Resistive transducers
---Ultrasonic transducer arrays
---Electronic equipment manufacture
---Damascene integration
---Micromachining
---Radiation hardening (electronics)
---Semiconductor device manufacture
---Diffusion processes
---Flip-chip devices
---High-k gate dielectrics
---Physical unclonable function
---Semiconductor device doping
---Semiconductor epitaxial layers
---Semiconductor growth
---Silicidation
---Wafer bonding
---Electronics packaging
---Chip scale packaging
---System-in-package
---Environmentally friendly manufacturing techniques
---Integrated circuit manufacture
---Surface mount technology
---Integrated circuit packaging
---Multichip modules
---Plastic integrated circuit packaging
---Semiconductor device packaging
---Thermal management of electronics
---Electronic packaging thermal management
---Electronics cooling

Computational and artificial intelligence

---Artificial intelligence
---Affective computing
---AI accelerators
---Autonomous robots
---Bio-inspired computing
---Cognitive systems
---Commonsense reasoning
---Context awareness
---Decision support systems
---Intelligent systems
---Autonomous systems
---Collective intelligence
---Hyper-intelligent systems
---Intelligent automation
---Intelligent robots
---Knowledge based systems
---Expert systems
---Mobile agents
---Knowledge engineering
---Inference mechanisms
---Knowledge acquisition
---Knowledge discovery
---Learning (artificial intelligence)
---Distance learning
---Naive Bayes methods
---Nearest neighbor methods
---Learning systems
---Backpropagation
---Cognitive systems
---Electronic learning
---Hybrid learning
---Learning automata
---Learning management systems
---Self-supervised learning
---Semisupervised learning
---Supervised learning
---Unsupervised learning
---Machine learning
---Adversarial machine learning
---Boosting
---Deep learning
---Dimensionality reduction
---Ensemble learning
---Federated learning
---Random forests
---Reinforcement learning
---Relevance vector machines
---Representation learning
---Robot learning
---Statistical learning
---Transfer learning
---Prediction methods
---Linear predictive coding
---Predictive coding
---Predictive encoding
---Predictive models
---Virtual artifact
...Autonomous mental development
...Computational intelligence
......Computation theory
......Computational complexity
......Concurrent computing
......Greedy algorithms
......Support vector machines
......Turing completeness
......Evolutionary computation
......Evolutionary robotics
......Particle swarm optimization
......Fuzzy systems
......Fuzzy control
......Fuzzy neural networks
......Hybrid intelligent systems
......Genetic algorithms
......Logic
......Fuzzy logic
......Takagi-Sugeno model
......Multivalued logic
......Probabilistic logic
......Sufficient conditions
......Machine intelligence
......Pattern analysis
......Neural networks
......Artificial neural networks
......Convolutional neural networks
......Hebbian theory
......Long short term memory
......Residual neural networks
......Self-organizing feature maps
......Biological neural networks
......Cellular neural networks
......Feedforward neural networks
......Extreme learning machines
......Multilayer perceptrons
......Graph neural networks
......Multi-layer neural network
......Neural network compression
......Neural network hardware
......Perception evolution networks
......Radial basis function networks
......Recurrent neural networks
......Hopfield neural networks

Computers and information processing

......Approximate computing
......Computer applications
......Application virtualization
......Edge computing
Arrays
Binary decision diagrams
Null value
Octrees
Persistent identifiers
Table lookup
Tree data structures
Dynamic voltage scaling
Memory architecture
Memory management
In-memory computing
Neural network compression
Multiprocessor interconnection
Hypercubes
Parallel architectures
Multicore processing
Reconfigurable architectures
Reconfigurable intelligent surfaces
Computer interfaces
Application programming interfaces
Restful API
WebRTC
Browsers
Field buses
Firewire
Haptic interfaces
Data gloves
Force feedback
Grasping
Tactile Internet
Hypertext systems
Input devices
Interface phenomena
Network interfaces
Interface states
Musical instrument digital interfaces
Ports (computers)
System buses
Computer networks
Ad hoc networks
AODV
Mesh networks
Mobile ad hoc networks
Vehicular ad hoc networks
Computer network management
Computer network reliability
Disruption tolerant networking
Management information base
Middleboxes
Network address translation
Network synthesis
Content distribution networks
Cyberspace
Cyberbullying
Diffserv networks
Domain Name System
Ethernet
Energy efficient ethernet
EPON
Heterogeneous networks
Internet
Bot (Internet)
Botnet
Cloud computing
Crowdsourcing
Dark Web
Instant messaging
Internet of Things
Internet privacy
Internet security
Internet telephony
Internet topology
Linked data
Middleboxes
Semantic Web
Social computing
Web 2.0
Web services
Intserv networks
IP networks
TCPIP
Metropolitan area networks
Multiprocessor interconnection networks
Network function virtualization
Cloud radio access networks
Virtual LAN
Network servers
Next generation networking
Overlay networks
Dark Web
Peer-to-peer computing
InterPlanetary File System
Software defined networking
Service function chaining
Virtual LAN
Storage area networks
Token networks
Unicast
Virtual private networks
Extranets
Wide area networks
Low-power wide area networks  
Wireless access points  
Computer performance  
Computer errors  
Computer crashes  
Hardware acceleration  
Performance loss  
Computer peripherals  
Disk drives  
Keyboards  
Modems  
Printers  
Laser printers  
Computer science  
Computational neuroscience  
Formal languages  
Computer languages  
Runtime library  
Network theory (graphs)  
Programming  
Augmented reality  
Automatic programming  
Concatenated codes  
Functional programming  
Granular computing  
Integer linear programming  
Logic programming  
Microprogramming  
Object oriented methods  
Object oriented programming  
Opportunistic software systems development  
Parallel programming  
Performance analysis  
Programming profession  
Robot programming  
Computer security  
Application security  
Authentication  
Multi-factor authentication  
Nonfungible tokens  
Cloud computing security  
Computer crime  
Counterfeiting  
Cyber terrorism  
Cyber threat intelligence  
Cyberattack  
SQL injection  
Computer hacking  
Cross-site scripting  
Cyber espionage  
Cyber warfare  
Cyberattack  
Data integrity  
Non-repudiation  
Denial-of-service attack  
Distributed denial-of-service attack  
Firewalls (computing)  
Honeypot (computing)  
Identity management systems  
Federated identity  
Internet security  
Mobile security  
Passwords  
Penetration testing  
Permission  
Phishing  
Proof of Work  
Trusted computing  
Computers  
Analog computers  
Calculators  
Difference engines  
Digital computers  
Mainframes  
Microcomputers  
Portable computers  
Workstations  
Parallel machines  
Supercomputers  
Exascale computing  
Tablet computers  
Wearable computers  
Smart glasses  
Wearable Health Monitoring Systems  
Concurrency control  
Processor scheduling  
Scheduling algorithms  
Data systems  
Buffer storage  
Triples (Data structure)  
Data acquisition  
Data transparency  
Fastbus  
User-generated content  
Data centers  
Data center power  
Data compression  
Adaptive coding  
Audio compression  
Huffman coding
DNA computing
File servers
Hardware

Hardware acceleration
Input devices
Open source hardware
Reconfigurable devices
Wireless access points

High performance computing
Exascale computing
Image processing

Active shape model
Blob detection
Corner detection
Feature detection
Feature extraction
Fiducial markers
Geophysical image processing

Gray-scale
Image analysis

Image classification
Image motion analysis
Image quality
Image sequence analysis
Image texture analysis

Object detection
Subtraction techniques
Image annotation
Image capture
Image coding

Image color analysis
Image decomposition
Image denoising
Image enhancement
Image filtering
Image fusion

Image recognition

Image edge detection
Image reconstruction
Image registration
Image representation

Digital representation
Image resolution

High-resolution imaging
Spatial resolution
Superresolution
Image restoration
Image sampling
Image segmentation
Semantic segmentation
Image sequences

Image stitching
Image synthesis

Human image synthesis
Image texture
Machine vision
Object recognition
Object segmentation
Morphological operations
Optical feedback
Pansharpening
Saliency detection
Smart pixels
Spatial coherence
Structure from motion
Table lookup
Thresholding (Imaging)

Memory

Analog memory
Associative memory
Cache memory
Cache storage
Content addressable storage
Flash memories
Flash memory cells
Magnetic memory
Floppy disks
Hard disks
Memory management
In-memory computing
Neural network compression
Nonvolatile memory
Phase change memory
Phase change random access memory
Random access memory
DRAM chips
Phase change random access memory
Resistive RAM
SDRAM
SRAM cells
SRAM chips
Read only memory
PROM
Read-write memory
Registers
Shift registers
Scanning probe data storage
Semiconductor memory
Integrated memory circuits

Mobile computing
Multi-access edge computing
Wireless access points
Molecular computing
Multitasking
Parametric study
Open systems
Open Access
Public domain software
Open Educational Resources
Physical layer
Physical layer security
Optical computing
Parallel processing
Multiprocessing systems
Data flow computing
Processor scheduling
Systolic arrays
Multithreading
Parallel algorithms
Pipeline processing
Pattern recognition
Active shape model
Activity recognition
Human activity recognition
Character recognition
Clustering methods
Pattern clustering
Data mining
Anomaly detection
Association rules
Data privacy
Text analysis
Text mining
Web mining
Face recognition
Fingerprint recognition
Gesture recognition
Sign language
Handwriting recognition
Forgery
Nearest neighbor methods
Pattern matching
Image matching
Speech recognition
Automatic speech recognition
Personal voice assistants
Speech analysis
Text recognition
Pervasive computing
Ubiquitous computing
Context-aware services
Wearable computers
Smart glasses
Wearable Health Monitoring Systems
Petascale computing
Platform virtualization
Probabilistic computing
Probability computing
Quantum computing
Quantum algorithm
Quantum annealing
Quantum cellular automata
Quantum chemistry
Quantum circuit
Quantum networks
Quantum simulation
Qubit
Real-time systems
Telexistence
WebRTC
Software
Anti-virus software
Application software
Decentralized applications
Closed box
Embedded software
Freeware
Glass box
Malware
Computer viruses
Computer worms
Ransomware
Rootkit
Trojan horses
Middleware
Mediation
Message-oriented middleware
Web services
Open source software
Open banking
Optical character recognition
License plate recognition
Privacy-invasive software
Spyware
Public domain software
Python
R language
Soft sensors
Software agents
Agent-based modeling
Autonomous agents
Botnet
Intelligent agents
Software as a service
Software debugging
Software design
Software maintenance
Software packages
EMTDC
PSCAD
SPICE
Software performance
Software quality
Software reusability
Software safety
Software systems
Software tools
Authoring systems
System software
File systems
Operating systems
Program processors
Utility programs
Software engineering
Capability maturity model
Computer aided software engineering
Formal verification
Full stack
Programming environments
Release engineering
Runtime
Dynamic compiler
Runtime environment
Software architecture
Client-server systems
Deep architecture
Dew computing
Microarchitecture
Representational state transfer
Restful API
Software libraries
Software product lines
System recovery
Checkpointing
Core dumps
Debugging
Time sharing computer systems
Virtual machine monitors
Audio systems
3D audio
Audio tapes
Audio-visual systems
Auditory displays
Headphones
Immersive audio
Loudspeakers
Microphones
Microphone arrays
Pitch control (audio)
Portable media players
Sonification
Spatial audio
Video description
Home automation
Home computing
Low-power electronics
Microwave ovens
Multimedia systems
Multimedia communication
Hypermedia
Multimedia computing
Multimedia databases
Control systems
Admittance control
Automatic control
Power generation control
Automatic generation control
Automotive control
Autopilot
Bidirectional control
Block signalling
Brakes
CAMAC
Centralized control
Closed loop systems
Control design
Control engineering
Control system security
Physical unclonable function
Control equipment
Actuators
Dielectric elastomer actuators
Electrostatic actuators
Ambient intelligence
 Electrothermal actuators
 Hydraulics actuators
 Intelligent actuators
 Microactuators
 Piezoelectric actuators
 Pneumatic actuators
 Fasteners
 Microcontrollers
 Regulators
 Remote control
 Servosystems
 Servomotors
 Switches
 Contactors
 Microswitches
 Optical switches
 Switchgear
 Circuit breakers
 Interrupters
 Relays
 Telecontrol equipment
 Thermostats
 Control system synthesis
 Controllability
 Cruise control
 Decentralized control
 Consensus control
 Distributed parameter systems
 Delay systems
 Added delay
 Delay lines
 Digital control
 Programmable control
 Flow graphs
 Fault tolerant control
 Feedback
 Feedback circuits
 Output feedback
 Negative feedback
 Neurofeedback
 Feedback linearization
 Fluid flow control
 Fluidics
 Microfluidics
 Nanofluidics
 Gaze tracking
 Electrooculography
 Homeostasis
 Linear feedback control systems
 Frequency locked loops
 Phase locked loops
 State feedback
 Tracking loops
 Magnetic variables control
 Mechanical variables control
 Displacement control
 Force control
 Level control
 Gyroscopes
 Motion control
 Collision avoidance
 Collision mitigation
 Formation control
 Kinetic theory
 Motion planning
 Path planning
 Visual servoing
 Pitch control (position)
 Position control
 Nanopositioning
 Shape control
 Size control
 Strain control
 Stress control
 Thickness control
 Torque control
 Velocity control
 Angular velocity control
 Vibration control
 Weight control
 Medical control systems
 Missile control
 Moisture control
 Humidity control
 Motion compensation
 Networked control systems
 Nonlinear control systems
 Open loop systems
 Optical control
 Lighting control
 Optical variables control
 Optogenetics
 Optimal control
 Bang-bang control
 Infinite horizon
 PD control
 PI control
 Pneumatic systems
 Positive train control
 Pressure control
 Proportional control
 Radio control
Dielectrics and electrical insulation

...Dielectrics
       ...Dielectric constant
       ...High-k gate dielectrics
       ...Dielectric devices
       ...Capacitors
       ...Ferroelectric devices
       ...Piezoelectric devices
       ...Pyroelectric devices
       ...Dielectric losses
       ...Dielectric substrates
       ...Dielectrophoresis
       ...Electrohydrodynamics
       ...Electrokinetics
       ...Electrostriction
       ...Electric breakdown
       ...Avalanche breakdown
       ...Corona
       ...Dielectric breakdown
       ...Arc discharges
       ...Discharges (electric)
       ...Electrostatic discharges
       ...Flashover
       ...Glow discharges
       ...Partial discharges
       ...Surface discharges
       ...Vacuum breakdown
       ...Sparks

...Insulation
       ...Cable insulation
       ...Power cable insulation
       ...Ceramics
       ...Bioceramics
       ...Porcelain
       ...Gas insulation
       ...Sulfur hexafluoride
       ...Insulators
       ...Metal-insulator structures
       ...Plastic insulators
       ...Rubber
       ...Topological insulators
       ...Trees - insulation
       ...Isolation technology
       ...Oil insulation
       ...Oil filled cables
       ...Plastic insulation

Education

...Adaptive learning
...Career development
...Continuing education
...Jobs listings
...Mentoring
...Educational courses
...Curriculum development
...Open Educational Resources
...Educational institutions
...Museums
...Virtual museums
...Educational programs
...Accreditation
...Continuing education
...Pre-college engineering
...Scholarships
...Self-study courses
...Seminars
...Webinars
...STEM
...Tutorials
...Educational technology
...Computer aided instruction
...Hybrid learning
...Learning management systems
...Courseware
...Electronic learning
...Mobile learning
...Engineering education
...Biomedical engineering education
Communication engineering education
Computer science education
Control engineering education
Electrical engineering education
Electronics engineering education
Engineering students
Physics education
Power engineering education
Student experiments
Systems engineering education

Humanities
Archeology
Art
Digital art
Fractal art
History
Music
Acoustics
Computer generated music
Electronic music
Musical instrument digital interfaces
Rhythm
Timbre
Natural languages
Linguistics
Natural language processing
Social sciences
Behavioral sciences
Psychology
Sociology

Training
Certification
Industrial training
Management training
On the job training
Qualifications
Vocational training

Electromagnetic compatibility and interference

Electromagnetic compatibility
Immunity testing
Reverberation chambers
Electromagnetics
Electromagnetic analysis
Air gaps
Characteristic mode analysis
Computational electromagnetics
Delay effects
Electromagnetic devices

Electromagnetic forces
Electromagnetic refraction
Permeability
Spark gaps
Time-domain analysis
Electromagnetic coupling
Mutual coupling
Optical coupling
Electromagnetic devices
Baluns
Electromagnetic induction
Eddy currents
Inductive power transmission
Electromagnetic metamaterials
Terahertz metamaterials
Electromagnetic radiation
Bremsstrahlung
Correlators
Electromagnetic wave absorption
Frequency
Gamma-rays
Line-of-sight propagation
Terahertz radiation
Electromagnetic shielding
Cable shielding
Magnetic shielding
Electromagnetic transients
EMP radiation effects
EMTDC
EMTP
Power system transients
Surges
Proximity effects
Interference
Clutter
Crosstalk
Diffraction
Echo interference
Electromagnetic interference
Radiofrequency interference
Specific absorption rate
Electromagnetic radiative interference
Electrostatic interference
Immunity testing
Interchannel interference
Interference cancellation
Interference channels
Interference constraints
Interference elimination
Interference suppression
Intersymbol interference
Rain fading
Terrain factors
TV interference
Radar
Airborne radar
Bistatic radar
Cognitive radar
Doppler radar
Ground penetrating radar
High frequency radar
Laser radar
Meteorological radar
Millimeter wave radar
Multistatic radar
MIMO radar
Passive radar
Quantum radar
Radar applications
Radar countermeasures
Radar detection
Radar imaging
Radar measurements
Radar polarimetry
Radar remote sensing
Radar tracking
Radar clutter
Radar cross-sections
Radar equipment
Radar theory
Spaceborne radar
Spread spectrum radar
Synthetic aperture radar
Inverse synthetic aperture radar
Polarimetric synthetic aperture radar
Ultra wideband radar

Electron devices

Cathode ray tubes
Electron guns
Electron multipliers
Electron tubes
Field emitter arrays
Klystrons
Magnetrons
Thyratrons
Traveling wave tubes
Mechatronics
Biomechatronics
Microelectromechanical systems

Microelectromechanical devices
Microactuators
Micromotors
Micropumps
Microvalves
Radiofrequency
micromechanical systems
Microfluidics
Micromechanical devices
Biomedical microelectromechanical systems
Fluidic Microsystems
Microfabrication
Photoelectricity
Photovoltaic effects
Shunts (electrical)
Photovoltaic cells
Light trapping
Quantum computing
Quantum algorithm
Quantum annealing
Quantum cellular automata
Quantum chemistry
Quantum circuit
Quantum networks
Quantum simulation
Qubit
Quantum well devices
Quantum well lasers
Quantum cascade lasers
Quantum wells
Two dimensional hole gas
Semiconductivity
Semiconductor devices
Flip-chip devices
Gunn devices
Hall effect devices
Junctions
Heterojunctions
Hybrid junctions
P-n junctions
Waveguide junctions
MIS devices
Charge coupled devices
MOS devices
MONOS devices
Piezoresistive devices
P-i-n diodes
Power semiconductor devices
Power transistors
Power semiconductor switches
Bipolar transistors
Thyristors
Quantum dots
Quantum well lasers
Quantum cascade lasers
Schottky diodes
Semiconductor counters
Semiconductor detectors
Semiconductor device modeling
Semiconductor device noise
Semiconductor diodes
P-i-n diodes
Schottky diodes
Semiconductor-metal interfaces
Superluminescent diodes
Varactors
Semiconductor lasers
Laser tuning
Quantum dot lasers
Quantum well lasers
Semiconductor laser arrays
Semiconductor optical amplifiers
Surface emitting lasers
Semiconductor waveguides
Semiconductor-insulator interfaces
Silicon devices
SONOS devices
Superluminescent diodes
Surface emitting lasers
Vertical cavity surface emitting lasers
Thermistors
Transistors
Field effect transistors
Heterojunction bipolar transistors
Millimeter wave transistors
Phototransistors
Static induction transistors
Single electron devices
Single electron memory
Hetero-nanocrystal memory
Single electron transistors
Thick film devices
Thick film inductors
Thin film devices
Film bulk acoustic resonators
Thin film inductors
Thin film transistors
Organic thin film transistors
Tunneling
Gate leakage
Josephson effect
Magnetic tunneling
Resonant tunneling devices
Superconductive tunneling
Tunneling magnetoresistance
Vacuum technology
Photomultipliers
Vacuum electronics
Vacuum systems
Gettering
Electronic design automation and methodology
Design automation
CAD/CAM
Logic design
Reconfigurable logic
PSCAD
Design methodology
Design for disassembly
Design for experiments
Design for manufacture
Design for quality
Design for testability
Design standards
Design tools
Extensibility
Graphics
Animation
Character generation
Computer graphics
Engineering drawings
Layout
Shape
Symbols
Virtual reality
Visualization
Green design
Ecodesign
Green computing
Integrated design
Process design
Pattern formation
Process modeling
Product design
Prototypes
Breadboard
Rapid prototyping
Technical drawing
Time to market
User centered design
Virtual prototyping

Engineering – general

Acoustical engineering
Agricultural engineering
Bio-inspired engineering
Bio-inspired computing
Bio-inspired control
Bio-inspired robotics
Chemical engineering
Civil engineering
Geotechnical engineering
Excavation
Geotechnical structures
Dams
Railway engineering
Railway safety
Structural engineering
Offshore installations
Concurrent engineering
Design engineering
Design tools
Electrical engineering
Electrical engineering computing
Engineering profession
Professional aspects
Environmental engineering
Maintenance engineering
Maintenance management
Predictive maintenance
Preventive maintenance
Condition monitoring
Systems support
Marine engineering
Mechanical engineering
Mechanical power transmission
Torque converters
Mechanical systems
Mechanical energy
Micromechanical devices
Suspensions (mechanical systems)
Optical engineering
Precision engineering
Production engineering
Production planning
Capacity planning
Materials requirements planning
Process planning
Research and development
Translational research
Reverse engineering
Sanitary engineering
Standardization
Formal specifications
Guidelines
Standards
Standards categories
Standards organizations
Standards publications
Thermal engineering

Engineering in medicine and biology

Biology
Biochemistry
Amino acids
Biochemical analysis
Peptides
Proteins
Receptor (biochemistry)
Biodiversity
Biogeography
Bioelectric phenomena
Electric shock
Biological cells
Cell signaling
Cells (biology)
Chromosome mapping
Endothelial cells
Fibroblasts
RNA
Stem cells
Biological information theory
Biological processes
Biological interactions
Chronobiology
Circadian rhythm
Coagulation
Molecular biology
Symbiosis
Synaptic communication
Biological system modeling
Biological systems
Anatomy
Molecular communication
Organisms
Biomedical computing
Biophotonics
Biophysics
Aerospace biophysics
Biomagnetics
Cellular biophysics
Molecular biophysics
Botany
Cryobiology
Evolution (biology)
Memes
Phylogeney
Genetics
DNA
Epigenetics
Gene therapy
Genetic communication
Genetic expression
Genetic programming
Genomics
Optogenetics
Homeostasis
Mechanobiology
Microbiology
Electroporation
Virology
Microinjection
Nanobiotechnology
DNA computing
Nanobioscience
Physiology
Action potentials
External stimuli
Neuromodulation
Somatosensory
Predator prey systems
Synthetic biology
Systematics
Systems biology
Vegetation
Crops
Marine vegetation
Zoology
Animals
Entomology
Biomedical communication
Biomedical telemetry
Telemedicine
Biomedical computing
Bioinformatics
Neuroinformatics
Medical expert systems
Medical information systems
Electronic medical records
Biomedical engineering
Bioimpedance
Biological techniques
Biomedical applications of radiation
Radiation therapy
Biomedical electronics
Biomedical signal processing
Biomedical image processing
Bioprinting
Biotechnology
Cloning
Drug delivery
Targeted drug delivery
Neural engineering
Neural circuits
Neural microtechnology
Neural nanotechnology
Neural prosthesis
Protein engineering
Tissue engineering
Regeneration engineering
Translational research
Biomedical equipment
Assistive technologies
Assistive devices
Assistive robots
Closed captioning
Video description
Wheelchairs
Biomedical electrodes
Biomedical telemetry
Biomedical transducers
Catheters
Endoscopes
Endomicroscopy
Gerontechnology
Hypodermic needles
Implants
Auditory implants
Brainstem implants
Cochlear implants
Microelectronic implants
Neural implants
Intracranial pressure sensors
Lithotriptors
Medical devices
Medical instruments
Pacemakers
Pulse oximeter
Stethoscope
Surgical instruments
...Laparoscopes...Deafness
...Ventilators...Dementia
...Biomedical imaging...Depression
...Angiocardiography...Diabetes
...Angiography...Diseases
...Biomedical optical imaging...Eczema
...Cardiography...Hemorrhaging
...Echocardiography...Hypertension
...Electrocardiography...Hyperthermia
...Phonocardiography...Injuries
...DICOM...Kidney stones
...Elastography...Motion sickness
...Encephalography...Obesity
...Mammography...Paralysis
...Medical diagnostic imaging...Pregnancy
...Anatomical structure...Scoliosis
...Molecular imaging...Sepsis
...Phantoms...Sleep apnea
...Photoacoustic imaging...Stroke (medical condition)
...Bionanotechnology...Thrombosis
...Bioterrorism...Tumors
...Computational biology...Visual impairment
...Computational biochemistry...Medical diagnosis
...Computational biophysics...Autopsy
...Computational systems biology...Bronchoscopy
...Genetic engineering...Colonoscopy
...Medical services...Computer aided diagnosis
...Assisted living...Medical signal detection
...Ambient assisted living...Nanomedicine
...Catheterization...Plethysmography
...Clinical diagnosis...Sensitivity and specificity
...Clinical neuroscience...Medical tests
...Cybercare...Colonography
...Electronic healthcare...Amniocentesis
...Health information management...Biopsy
...Hospitals...Cancer detection
...In vitro...Colonoscopy
...In vitro fertilization...Pregnancy test
...In vivo...Medical treatment
...Internet of Medical Things...Acupuncture
...Medical conditions...Anesthesia
...Medical diagnosis...Angioplasty
...Autopsy...Brachytherapy
...Bronchoscopy...Brain stimulation
...Colonoscopy...Cancer treatment
...Cancer detection...Chemotherapy
...Clinical trials...Clinical trials
...Defibrillation...Cryotherapy
...Dentistry...Electrical stimulation
...Electrical stimulation...Electronic medical prescriptions
...Electronic medical prescriptions
Electroporation
Embolization
Fibrillation
Geriatrics
Hepatectomy
Hospitals
Hyperthermia
Immunotherapy
Intubation
Lithotripsy
Magnetic stimulation
Neuromuscular stimulation
Neutron capture therapy
Noninvasive treatment
Orthopedic procedures
Orthotics
Patient rehabilitation
Pharmaceuticals
Precision medicine
Proton therapy
Surgery
Occupational medicine
Organ transplantation
Point of care
Prosthetics
Artificial biological organs
Artificial limbs
Neuroprostheses
Prosthetic hand
Prosthetic limbs
Visual prosthesis
Public healthcare
Sensory aids
Hearing aids
Smart healthcare
Wearable Health Monitoring
Systems
Vaccines
X-rays
X-ray applications
X-ray astronomy
X-ray detection
X-ray scattering
X-ray telescopes
X-ray tomography
Medical specialties
Anesthesiology
Cardiology
Cardiac tissue
Dermatology
Endocrinology
Gastroenterology
Gerontology
Gerontechnology
Gynecology
Immunology
Antigens
Neonatology
Nephrology
Neurology
Obstetrics
Oncology
Radiation therapy
Ophthalmology
Pathology
Histopathology
Neuropathology
Pathological processes
Pediatrics
Psychiatry
Mental disorders
Pulmonology
Spirometry
Radiology
Neuroradiology
Nuclear medicine
Synthetic biology

Engineering management

Business
data processing
intelligence
Commerce and trade
Free economic zones
Product delivery
Disruptive innovation
Entrepreneurship
Franchising
Industrial relations
Management
Asset management
Best practices
Building management systems
Business continuity
Business process management
Business process re-engineering
Communication system operations
and management
Conference management
Content management
Contingency management
Contract management

Contracts

Customer relationship management

Decision making

Dependability management

Distributed management

Enterprise resource planning

Facilities management

Financial management

Governmental factors

Human resource management

Information management

Interface management

International collaboration

Knowledge management

Marketing management

Organizational aspects

Outsourcing

Process planning

Production management

Program management

Project management

Public relations

Quality management

Requirements management

Research and development management

Resource management

Risk analysis

Safety management

Security management

Storage management

Supply chain management

Technical management

Technology management

Operations research

Inventory control

Virtual enterprises

Organizations

BNSC

Companies

Decentralized autonomous organization

European Space Agency

Government

Sociotechnical systems

United Kingdom Space Agency

Commercialization

Consortia

Economics

Access charges

Costs

Cost benefit analysis

Developing countries

Econometrics

Economic forecasting

Economic indicators

Share prices

Electronic commerce

Environmental economics

Carbon tax

Emissions trading

Exchange rates

Free economic zones

Freeports

Fuel economy

International trade

Macroeconomics

Privatization

Microeconomics

Economies of scale

Industrial economics

Monopoly

Oligopoly

Power generation economics

Electricity supply industry
deregulation

Profitability

Sharing economy

Stock markets

Supply and demand

Trade agreements

Venture capital

Virtual enterprises

Innovation management

Creativity

Legal factors

Copyright protection

Intellectual property

Software protection

Law

Censorship

Commercial law

Consumer protection

Contract law

Criminal law

Employment law

Forensics

Fraud

Law enforcement

Patent law

Trademarks
......Patents
......Product liability
......Warranties
......Software protection
......Trademarks
......Market research
......Planning
......Meeting planning
......Schedules
......Strategic planning
......Roadmaps (technology planning)
......Technical planning
......Technology planning
......Product development
......Graphical user interfaces
......Avatars
......Product customization
......Product lifecycle management
......Prognostics and health management
......Software product lines
......Time to market
......Project engineering
......Scheduling
......Adaptive scheduling
......Dynamic scheduling
......Job shop scheduling
......Single machine scheduling
......Turnkey project
......Research and development management
......Innovation management
......Creativity
......Research initiatives
......Software development management
......Agile software development
......Scrum (Software development)
......Model-driven development

Geoscience and remote sensing

......Environmental factors
......Biosphere
......Climate change
......Global warming
......Ecology
......Ecosystems
......Wetlands
......Environmental economics
......Carbon tax
......Emissions trading

......Environmental monitoring
......Global warming
......Green manufacturing
......Green products
......Green buildings
......Green cleaning
......Green transportation
......Pollution
......Air pollution
......Emissions trading
......Industrial pollution
......Land pollution
......Oil pollution
......Radioactive pollution
......Thermal pollution
......Urban pollution
......Water pollution
......Geographic information systems
......Geospatial analysis
......Gunshot detection systems
......Geophysical measurement techniques
......Geophysical image processing
......Geophysical measurements
......Geodesy
......Level measurement
......Sea measurements
......Geoaoustic inversion
......Seismic measurements
......Geophysical signal processing
......Geoscience
......Antarctica
......South Pole
......Arctic
......North Pole
......Atmosphere
......Air quality
......Atmospheric modeling
......Atmospheric waves
......Biosphere
......Continents
......Africa
......Asia
......Australia
......Europe
......North America
......South America
......Cyclones
......Hurricanes
......Tropical cyclones
......Earth
......Earthquakes
IEEE Councils
IEEE Foundation
IEEE Press
IEEE Regions
IEEE Sections
IEEE Societies
IEEE governance
IEEE bylaws
IEEE Constitution
IEEE policy and procedures
IEEE staff
IEEE indexing
Awards
Nobel Prize
Book reviews
Interviews
Obituaries
Software reviews
Special issues and sections
Tutorials
Video reviews
IEEE members
IEEE Associate Members
IEEE Fellows
IEEE Life Members
IEEE Senior Members
IEEE news
IEEE Society news
IEEE products
IEEE catalogs
IEEE Collabratec
IEEE educational products
IEEE merchandise
IEEE publications
IEEE books
IEEE conference proceedings
IEEE directories
IEEE journals
IEEE magazines
IEEE newsletters
IEEE online publications
IEEE transactions
Notice of Violation
IEEE Xplore
IEL

Imaging

Biomedical imaging
Angiocardiography
Angiography
Biomedical optical imaging
Cardiography
Echocardiography
Electrocardiography
Phonocardiography
DICOM
Elastography
Encephalography
Mammography
Medical diagnostic imaging
Anatomical structure
Molecular imaging
Phantoms
Photoacoustic imaging
Cameras
Digital cameras
Smart cameras
Webcams
Focusing
Ground penetrating radar
Holography
Image converters
Image intensifiers
Image sensors
Active pixel sensors
CCD image sensors
Charge-coupled image sensors
CMOS image sensors
Infrared image sensors
Image storage
Infrared imaging
Night vision
Magnetic resonance imaging
Diffusion tensor imaging
Functional magnetic resonance imaging
Magnetic resonance elastography
Magnetic resonance fingerprinting
Magneto electrical resistivity imaging technique
Microscopy
Atomic force microscopy
Electron microscopy
Photoelectron microscopy
Scanning electron microscopy
Transmission electron microscopy
Endomicroscopy
Scanning microwave microscopy
Scanning probe microscopy
Scanning thermal microscopy
Microwave imaging
Multispectral imaging
Nuclear imaging
Energy resolution
Ion emission
Optical imaging
Optical flow
Optical projectors
Talbot effect
Thermoreflectance imaging
Photography
Cinematography
Digital photography
Image forensics
Photomicrography
Photorealism
Radiation imaging
Radiography
Diagnostic radiography
Stereo vision
Stereo image processing
Terahertz wave imaging
Tomography
Computed tomography
Single photon emission computed tomography
Electrical capacitance tomography
Electrical impedance tomography
Magnetic particle imaging
Optical coherence tomography
Positron emission tomography
Whole-body PET
Reconstruction algorithms

Industrial electronics
Assembly systems
Flexible electronics
Robotic assembly
Computer aided manufacturing
CADCAM
Silicon compiler
Cryogenic electronics
Industrial control
Process control
Predictive control
Three-term control
Two-term control
Production control
Continuous production
Lot sizing
Optimized production technology

Integrated manufacturing systems
Machine control
Machine vector control
Manufacturing automation
Computer aided manufacturing
CADCAM
Silicon compiler
Computer integrated manufacturing
Computer numerical control
Flexible manufacturing systems
Testing
Aerospace testing
Wind tunnels
Automatic testing
Automatic test pattern generation
Ring generators
Benchmark testing
Built-in self-test
Circuit testing
Integrated circuit measurements
Conformance testing
Electronic equipment testing
Immunity testing
Error analysis
Bit error rate
Finite wordlength effects
Error-free operations
Failure analysis
Equipment failure
Semiconductor device breakdown
Frequency response
Impulse testing
Insulator testing
Insulation testing
Integrated circuit testing
Integrated circuit yield
Logic testing
Life testing
Materials testing
Accelerated aging
Acoustic testing
Adhesive strength
Bonding forces
Delamination
Elastic recovery
Nondestructive testing
Optical fiber testing
Remaining life assessment
Ring generators
Semiconductor device testing
<table>
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<th>Combinatorial testing</th>
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<td>Test equipment</td>
<td>Automatic test equipment</td>
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<td>Test facilities</td>
<td>Anechoic chambers</td>
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<td>Laboratories</td>
<td>Large Hadron Collider</td>
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<td>Open area test sites</td>
<td>TEM cells</td>
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<td>Wind tunnels</td>
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**Industry applications**

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<td>Electrical accidents</td>
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<tr>
<td>Industrial accidents</td>
<td>Marine accidents</td>
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<td>Railway accidents</td>
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<td>Chemical reactions</td>
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<td>Bioreactors</td>
<td>Catalysis</td>
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<td>Continuous-stirred tank reactor</td>
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<td>Ignition</td>
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<td>Chemical sensors</td>
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<td>Crystallizers</td>
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<td>Distillation equipment</td>
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<td>Fluidization</td>
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<td>Pharmaceutical technology</td>
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<td>Vitrification</td>
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<td>Electrochemical devices</td>
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<td>Amperometric sensors</td>
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<td>Batteries</td>
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<td>Fuel cells</td>
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...Food technology
..Food preservation
...High-temperature techniques
...Rapid thermal processing
...Industrial engineering
...Industrial communication
...Industries
...Agriculture
......Agricultural products
......Aquaculture
......Fertilizers
......Greenhouses
......Irrigation
......Smart agriculture
...Airline industry
...Architecture
...Beverage industry
...Chemical industry
...Coal industry
...Communication industry
...Computer industry
...Construction
......Buildings
......Green buildings
......Modular construction
......Prefabricated construction
......Stairs
...Construction industry
......Prefabricated construction
...Defense industry
...Electrical engineering industry
...Entertainment industry
...Sports
...Farming
...Financial industry
......Banking
......Financial services
...Gas industry
...Horticulture
......Hydroponics
...Information industry
...Manufacturing industries
......Aerospace industry
......Cement industry
......Ceramics industry
......Clothing industry
......Electrical products industry
......Electronics industry
......Food industry
......Footwear industry
......Fuel processing industries
......Glass industry
......Machinery production industries
......Metal product industries
......Plastics industry
......Pulp and paper industry
......Rubber industry
......Shipbuilding industry
......Textile industry
......Toy manufacturing industry
......Metals industry
......Mining industry
......Coal mining
......Natural gas industry
......Petroleum industry
......Oil drilling
......Oil refineries
......Well logging
......Power industry
......Electrical equipment industry
......Electricity supply industry
......Nuclear facility regulation
......Power system interconnection
......Steel industry
......Sugar industry
......Sugar refining
......Textile technology
......Spinning
......Weaving
......Tourism industry
......Toy industry
......Transportation industry
......Wood industry
......Inspection
......Automatic optical inspection
......Machinery
......Agricultural machinery
......Agricultural robots
......Ball bearings
......Belts
......Drives
......Hydraulic drives
......Motor drives
......Variable speed drives
......Electric machines
......AC machines
......Alternators
......Brushless machines
......Compressors
......Conductors
......DC machines
......Electric fences
Flow production systems

Food manufacturing

Forging

Glass manufacturing

Integrated manufacturing systems

Intelligent manufacturing systems

Job production systems

Joining processes

Layered manufacturing

Lean production

Manufacturing processes

Mass production

Melt processing

Pulp manufacturing

Sheet metal processing

Thermoforming

Three-dimensional printing

Mass customization

Smart manufacturing

Tolerance analysis

Packaging

Bagging

Bottling

Canning

Encapsulation

Food packaging

Labeling

Multichip modules

Nanopackaging

Plastic packaging

Wrapping

Paper technology

Production

Ball milling

Compression molding

Embossing

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Dairy products

Fats

Food security

Food waste

Sugar

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Injection molding

Materials processing

Annealing

Bleaching

Casting

Coatings

Curing

Etching

Heat treatment

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Lamination

Laser materials processing

Machining

Melt processing

Plasma materials processing

Plating

Pressing

Punching

Refining

Shearing

Smelting

Softening

Swaging

Vapor deposition

Mechanical products

Automotive components

Axles

Bellows

Blades

Brakes

Couplings

Fasteners

Flanges

Gears

Hoses

Machine components

Mechanical guides

Needles

Orifices

Pistons

Pressure vessels

Seals

Springs

Steering systems

Structural shapes

Tires

Vents

Wheels

Process planning

Business process integration

Business process management

Cause effect analysis

Root cause analysis

Production control

Continuous production

Lot sizing

Optimized production technology

Scheduling

Production engineering
..............Production planning
..............Production equipment
..............Applicators
..............Clamps
..............Cutting tools
..............Fixtures
..............Machine tools
..............Mining equipment
..............Molding equipment
..............Packaging machines
..............Paper making machines
..............Polishing machines
..............Soldering equipment
..............Production facilities
..............Foundries
..............Greenhouses
..............Industrial facilities
..............Industrial plants
..............Machine shops
..............Paper mills
..............Production management
..............Control charts
..............Inventory management
..............Lead time reduction
..............Logistics
..............Process planning
..............Production planning
..............Production materials
..............Abrasives
..............Aerospace materials
..............Automotive materials
..............Inhibitors
..............Ink
..............Joining materials
..............Lubricants
..............Retardants
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..............Assembly systems
..............Exhaust systems
..............Intelligent manufacturing systems
..............Lean production
..............Manufacturing systems
..............Steering systems
..............Productivity
..............Shafts
..............Camshafts
..............Springs
..............Transfer molding
..............Safety
..............Aerospace safety
..............Air safety
..............Domestic safety
..............Fall detection
..............Emergency services
..............Explosion protection
..............Fire safety
..............Hazards
..............Biohazards
..............Chemical hazards
..............Explosions
..............Fires
..............Flammability
..............Floods
..............Hazardous areas
..............Hazardous materials
..............Toxicology
..............Health and safety
..............Occupational health
..............Occupational safety
..............Personal protective equipment
..............Marine safety
..............Product safety
..............Protection
..............Electrostatic discharge protection
..............Explosion protection
..............Lightning protection
..............Radiation protection
..............Radiation safety
..............Radiation protection
..............Radiofrequency safety
..............Safety devices
..............Eye protection
..............Fire extinguishers
..............Protective clothing
..............Safety management
..............Vehicle safety
..............Advanced driver assistance
..............Lane departure warning systems
..............Lane detection
..............Security
..............Access control
..............Access lists
..............Authorization
..............Block lists
..............Multi-factor authentication
..............Non-repudiation
..............Passwords
..............Alarm systems
..............Smoke detectors
..............Capability-based security
..............Computer security
Application security
Authentication
Cloud computing security
Computer crime
Computer hacking
Cross-site scripting
Cyber espionage
Cyber warfare
Cyberattack
Data integrity
Denial-of-service attack
Firewalls (computing)
Honey pot (computing)
Identity management systems
Internet security
Mobile security
Passwords
Penetration testing
Permission
Phishing
Proof of Work
Trusted computing
Control system security
Physical unclonable function
Cryptography
Blockchains
Ciphers
Cryptocurrency
Cryptographic hash function
Encryption
Multi-party computation
Public key
Quantum cryptography
Random number generation
Side-channel attacks
Steganography
Zero knowledge proof
Data security
Cryptography
Message authentication
Tokenization
Digital signatures
Food security
Information security
Cyber espionage
Data breach
Intrusion detection
Phishing
Privacy breach
Social engineering (security)
SQL injection
Trust management
Network security
Network reconnaissance
Power system security
Reconnaissance
Security management
Terrorism
Bioterrorism
Cyber terrorism
National security
Watermarking
Zero Trust
Wine industry
Wineries

Information theory

Audio coding
Biological information theory
Channel coding
Block codes
Linear codes
Polar codes
Combined source-channel coding
Turbo codes
Codes
Binary codes
Reflective binary codes
Convolutional codes
Cyclic redundancy check codes
Error correction codes
Reed-Muller codes
Reed-Solomon codes
Parity check codes
Iterative decoding
Product codes
Bar codes
Space-time codes
Zero correlation zone
Communication channels
Channel allocation
Spectral efficiency
Channel capacity
Channel estimation
Channel models
Channel spacing
Channel state information
Gaussian channels
AWGN channels
Multipath channels
Multiuser channels
Partial response channels
Quantum channels
Throughput
Time-varying channels
Decoding
Maximum likelihood decoding
Encoding
Audio coding
Channel coding
Block codes
Combined source-channel coding
Turbo codes
Code refractoring
Digital representation
Entropy coding
Huffman coding
Precoding
Source coding
Speech coding
Transcoding
Error compensation
Genetic communication
Hamming distances
Hamming weight
Information entropy
Mutual information
Network coding
Rate distortion theory
Channel rate control
Rate-distortion
Source coding
Speech coding
Technology acceptance model

Instrumentation and measurement

Computerized instrumentation
Electric variables
Admittance
Admittance control
Capacitance
Parasitic capacitance
Quantum capacitance
Capacitance-voltage characteristics
Conductivity
Photoconductivity
Semiconductivity
Transconductance
Current
BiopGRID
Current slump

Dark current
Fault currents
Inrush current
Leakage currents
Persistent currents
Short-circuit currents
Threshold current
Current-voltage characteristics
Electric potential
Gain
Impedance
Impedance matching
Baluns
Inductance
Permittivity
Piezoresistance
Q-factor
Resistance
Electric resistance
Piezoresistance
Surface resistance
Thermal resistance
Viscosity
Voltage
Breakdown voltage
Dynamic voltage scaling
Threshold voltage
Voltage fluctuations
Wiring
High energy physics instrumentation computing
Linear particle accelerator
Instruments
Barometers
Compass
Medical instruments
Meters
Dynamometers
Flowmeters
Goniometers
Potentiometers
Radiometers
Tachometers
Vibrometers
Voltmeters
Wattmeters
Microscopy
Atomic force microscopy
Electron microscopy
Endomicroscopy
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Built-in self-test
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Insulation testing
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Acoustic testing
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Nondestructive testing
Optical fiber testing
Remaining life assessment
Ring generators
Semiconductor device testing
Software testing
Combinatorial testing
Fuzzing
System testing
Model checking
Test equipment
Automatic test equipment
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Large Hadron Collider
Open area test sites
TEM cells
Wind tunnels

Intelligent transportation systems

Automated highways
Geographic information systems
Geospatial analysis
Gunshot detection systems
Intelligent vehicles
Autonomous vehicles
Autonomous aerial vehicles
Autonomous automobiles
Autonomous driving
Autonomous underwater vehicles
Vehicle-to-everything
Vehicle-to-infrastructure
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Dead reckoning
Indoor navigation
Inertial navigation
Marine navigation
Radio navigation
Satellite navigation systems
Global navigation satellite system
Global Positioning System
Satellite constellations
Sonar navigation
Transportation
Air transportation
Aircraft
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Escalators
Green transportation
Land transportation
Rail transportation
Road transportation
Public transportation
Seaports
Smart transportation
Vehicles
Connected vehicles
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Garnets
Garnet films
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Iodine compounds

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Mercury (metals)

Molybdenum

Neon

Neptunium

Nitrogen

Nitrogen compounds

Silicon nitride

Osmium

Oxygen

Phosphorus

Plutonium

Polonium

Potassium

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Promethium

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Radium

Radon

Rhenium

Rhodium

Roentgenium

Rubidium

Ruthenium

Scandium

Selenium

Sodium

Sulfur

Sulfur compounds

Tantalum

Technetium

Tellurium

Terbium

Thallium

Thorium

Thulium

Titanium

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Titanium dioxide

Titanium nitride

Uranium

Vanadium

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Yttrium

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Zirconium

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Gallium arsenide

Gallium nitride

Indium gallium arsenide
............Indium gallium nitride
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............Indium gallium arsenide
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............Carbon compounds
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............Volatile organic compounds
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............Silicides
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............Silicon nitride
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...............Catalysts
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...............Bioceramics
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Relational databases
Spatial databases
Transaction databases
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Visual databases
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Semantic search
Web search
Social networking (online)
Community networks
Computer mediated communication
Cyberbullying
Second Life
Tagging
Tag clouds
Taxonomy
Terminology
Dictionaries
Visual information retrieval
Vocabulary
Web sites

Uniform resource locators
Web design
Information science
Quantum information science
Quantum channels
Quantum circuit
Information services
Dictionaries
Document delivery
Encyclopedias
Libraries
Software libraries
Teletext
Videotex
Information systems
Data systems
Buffer storage
Data acquisition
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Data compression
Data conversion
Data engineering
Data handling
Data processing
Data warehouses
Database systems
Audio databases
Deductive databases
Information systems
Data systems
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Buffer storage
Data acquisition
Data centers
Data compression
Common Information Model (electricity)

Competitive intelligence

Digital preservation

Document handling

Enterprise architecture management

Information security

Information sharing

Knowledge transfer

Information processing

Electronic healthcare

Informatics

Information exchange

Smart agriculture

Sonification

Management information systems

Portals

Medical information systems

Electronic medical records

Information technology

Bring your own device

Information age

Information and communication technology

 Ambient assisted living

Information representation

Digital representation

Printing

Digital printing

Ink jet printing

Teleprinting

Three-dimensional printing

Semantic technology

Service computing

Service level agreements

Telematics

Universal Serial Bus

Manuals

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Public speaking

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Dissolved gas analysis

Fault location

Fault tolerance

Fault tolerant computer networks

Fault tolerant computing

Fault tolerant control

Redundancy

Fluctuations

Integrated circuit reliability

Maintenance

Maldistribution

Materials reliability

Reliability engineering

Reliability theory

Robustness

Semiconductor device reliability

Software reliability

Stability

Circuit stability

Robust stability

Stability analysis

Stability criteria

Thermal stability

Telecommunication network reliability

Diversity schemes

Resonance

Ferroresonance

Magnetic resonance

Antiferromagnetic resonance

Ferromagnetic resonance

Nuclear magnetic resonance
Robotics and automation

...Animatronics
...Automation
......Automated highways
......Automatic generation control
......Automatic testing
..........Automatic test pattern generation
..........Ring generators
......Building automation
......Fifth Industrial Revolution
......Fourth Industrial Revolution
......Intelligent automation
......Manufacturing automation
.........Computer aided manufacturing
.........Computer integrated manufacturing
.........Computer numerical control
.........Flexible manufacturing systems
......Office automation
.........Workflow management software
......Storage automation
......Vehicular automation
...Autonomous systems
...Autonomous robots
...Autonomous vehicles
......Autonomous aerial vehicles
......Autonomous automobiles
......Autonomous driving
......Autonomous underwater vehicles
...Multi-robot systems
...Swarm robotics
...Robots
......Agricultural robots
......Androids
......Aquatic robots
......Automata
.........Turing machines
......Autonomous robots
......Bio-inspired robotics
......Cognitive robotics
......Computer vision
.........Active appearance model
.........Blob detection
.........Corner detection
.........Face detection
.........Feature detection
.........Interest point detection
......Smart cameras
......Visual odometry
......Educational robots
......Evolutionary robotics
......Humanoid robots
......Intelligent robots
......Manipulators
......End effectors
..........Manipulator dynamics
..........Micromanipulators
......Marine robots
......Medical robotics
......Assistive robots
......Military robotics
......Mobile robots
......Climbing robots
......Legged locomotion
......Orbital robotics
......Parallel robots
......Quadrupedal robots
......Rescue robots
......Robot control
......Robot motion
......Robot kinematics
......Motion analysis
......Robot learning
......Robot programming
......Robot sensing systems
......Proprioception
......Robot vision systems
..........Simultaneous localization and mapping
..........Stereognosis
..........Tactile sensors
......Service robots
..........Assistive robots
......Snake robots
......Social robots
......Soft robotics
......Telerobotics
......Teleoperators
......Visual odometry
......Wearable robots

Science – general

...Astronomy
..........Astrophysics
..........Dark matter
..........Orbits
..........Stellar dynamics
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........Soil texture
....Tornadoes
....Tsunami
....Volcanoes
........Volcanic activity
........Volcanic ash
....Wetlands
....Life sciences
....Metrology
........Optical metrology
....Neuroscience
........Clinical neuroscience
........Cognitive neuroscience
........Computational neuroscience
........Neuroinformatics
........Neuromarketing
........Neuroprostheses
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....Transcranial direct current stimulation
....Transcranial magnetic stimulation
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..........Acoustic beams
..........Laser beams
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........Particle beams
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........Cellular biophysics
........Molecular biophysics
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........Entropy
........Fluid flow
........Fluid dynamics
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........Hydrology
........Pipelines
........Supersonic flow
........Valves
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........EMTDC
........Extraterrestrial phenomena
........Geodynamics
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........Damping
........Dynamics
........Fatigue
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**Sensors**

| Acoustic sensors              |                           |
| Chemical and biological sensors|                           |
| Biosensors                    |                           |
| Gas detectors                 |                           |
| Amperometric sensors          |                           |
| Electromechanical sensors     |                           |
| Microsensors                  |                           |
| Force sensors                 |                           |
| Glucose sensors               |                           |
| Inertial sensors              |                           |
| Infrared sensors              |                           |
| Intelligent sensors           |                           |
| Intracranial pressure sensors |                           |
| Ionizing radiation sensors    |                           |
| Position sensitive particle detectors | |
Bolometers
Gamma-ray detectors
Infrared detectors
Photodetectors
Semiconductor radiation detectors
Silicon radiation detectors
X-ray detectors
Magnetic sensors
Spin valves
Mechanical sensors
Capacitive sensors
Multimodal sensors
Nanosensors
Optical sensors
Optical detectors
Bar codes
Optical fiber sensors
Optoelectronic and photonic sensors
Pressure sensors
Quantum sensing
Sensor phenomena and characterization
Sensor placement
Sensor systems and applications
Detectors
Envelope detectors
Semiconductor detectors
Electric sensing devices
Leak detection
Radiofrequency identification
RFID tags
Robot sensing systems
Proprioception
Robot vision systems
Simultaneous localization and mapping
Stereognosis
Tactile sensors
Sensor arrays
Sensor fusion
Sensor systems
Activity recognition
Gunshot detection systems
Soft sensors
Thermal sensors
Electrothermal actuators
Temperature sensors
Thermocouples
Thermometers
Thick film sensors
Thin film sensors
Vision sensors
Wearable sensors

Signal processing
Acoustic signal processing
Active noise reduction
Echo cancellers
Speech processing
Human voice
Speech enhancement
Speech synthesis
Voice activity detection
Adaptive signal processing
Adaptive filters
Adaptive signal detection
Amplifiers
Broadband amplifiers
Differential amplifiers
Distributed amplifiers
Low-noise amplifiers
Operational amplifiers
Feedback amplifiers
Power amplifiers
High power amplifiers
Predistortion
Preamplifiers
Pulse amplifiers
Radiofrequency amplifiers
Resonators
Cavity resonators
Split ring resonators
Array signal processing
Attenuators
Optical attenuators
Chirp
Convolution
Convolvers
Decorrelation
Digital signal processing
Delta modulation
Delta-sigma modulation
Sigma-delta modulation
Digital signal processing chips
Dispersion
Chromatic dispersion
Optical fiber dispersion
Distortion
Acoustic distortion
Four-wave mixing
Jitter
Timing jitter
Nonlinear distortion
Harmonic distortion
Intermodulation distortion
Phase distortion
Error correction
Forward error correction
Fading channels
Frequency-selective fading channels
Rayleigh channels
Weibull fading channels
Filters
Active filters
Band-pass filters
Anisotropic
Bragg gratings
Fiber gratings
Channel bank filters
Comb filters
Digital filters
Finite impulse response filters
Equalizers
Adaptive equalizers
Blind equalizers
Decision feedback equalizers
Filtering theory
Collaborative filtering
Image filtering
Gabor filters
Harmonic filters
IIR filters
Kalman filters
Low-pass filters
Matched filters
Microstrip filters
Nonlinear filters
Notch filters
Particle filters
Power filters
Spurline
Resonator filters
Spatial filters
Superconducting filters
Transversal filters
Frequency locked loops
Geophysical signal processing
Limiting
Local field potentials
Modulation
Amplitude modulation
Amplitude shift keying
Quadrature amplitude modulation
Chirp modulation
Demodulation
Digital modulation
Constellation diagram
Partial response signaling
Frequency modulation
Frequency shift keying
Magnetic modulators
Modulation coding
Interleaved codes
Optical modulation
Cross-phase modulation
Intensity modulation
Optical modulators
Electro-absorption modulators
Electro-optic modulators
Phase modulation
Continuous phase modulation
Cross-phase modulation
Differential phase shift keying
Phase shift keying
Pulse modulation
Pulse width modulation
Pulse width modulation inverters
Space vector pulse width modulation
Multidimensional signal processing
Video signal processing
Motion artifacts
Video coding
Video compression
Noise
1/f noise
Additive noise
Additive white noise
AWGN
Colored noise
Gaussian noise
AWGN
Laser noise
Laser feedback
Low-frequency noise
Noise cancellation
Phase noise
Signal to noise ratio
PSNR
Superconducting device noise
White noise
AWGN
Optical signal processing
Laser noise
Laser feedback
Optical wavelength conversion
Phase locked loops
Pulse compression methods
Optical pulse compression
Pulse shaping methods
Optical pulse shaping
Quantization (signal)
Vector quantization
Radar signal processing
Received signal strength indicator
Recording
Audio recording
Digital recording
Disk recording
Flight recording
Magnetic recording
Digital magnetic recording
Heat-assisted magnetic recording
Magnetic noise
Magnetooptic recording
Microwave-assisted magnetic recording
Perpendicular magnetic recording
Shingled magnetic recording
Optical recording
CD recording
Video recording
High definition video
Videos
Webcams
RF signals
Signal analysis
Discrete-event systems
Harmonic analysis
Parameter estimation
Amplitude estimation
Direction-of-arrival estimation
Frequency estimation
Motion estimation
Phase estimation
Time of arrival estimation
Signal mapping
Spectral analysis
Infrared spectra
Judd-Ofelt theory
Spectroradiometers
Signal design
Signal detection
Acoustic signal detection
Sonar detection
Motion detection
Multiuser detection
Optical signal detection
Phase detection
Phase frequency detectors
Radar detection
Signal generators
Noise generators
Pulse generation
Optical pulse generation
Signal integrity
Signal reconstruction
Signal denoising
Signal resolution
Diversity reception
Signal restoration
Signal sampling
Signal synthesis
Source separation
Blind source separation
Spectrogram
Tracking loops
Social implications of technology
Cultural aspects
Cultural differences
Cultural differences
Environmental factors
Biosphere
Climate change
Global warming
Ecology
Ecosystems
Wetlands
Environmental economics
Carbon tax
Emissions trading
Environmental monitoring
Global warming
Green manufacturing
Green products
Green buildings
Green cleaning
Green transportation
Pollution
Air pollution
Emissions trading
Industrial pollution
Land pollution
Oil pollution
Radioactive pollution
Thermal pollution
Urban pollution
Water pollution
Ethical aspects
Ethics
Cyberethics
Machine ethics
Globalization
International relations
Peace technology
Philosophical considerations
Social factors
Demography
Developing countries
Technology social factors
Privacy
Sustainable development
Technology
Appropriate technology
Disruptive technologies
Machine ethics
Neurotechnology
Technological innovation
Technology social factors
Privacy
Technology transfer
Small business technology transfer
Telepresence
Telexistence

Solid state circuits

Circuit subsystems
Circuit theory
Inductive coupling
FET circuits
FET integrated circuits
Field effect MMIC
MESFET integrated circuits
JFET circuits
JFET integrated circuits
MESFET circuits
MESFET integrated circuits
MODFET circuits
MOSFET circuits
CMOSFET circuits
MOS integrated circuits
Power MOSFET
Gate leakage
Solid state circuit design

Transistors
Field effect transistors
CNTFETs
Double-gate FETs
FeFETs
HEMTs
JFETs
MESFETs
MISFETs
MODFETs
MOSFET
MOSHFETs
OFETs
Schottky gate field effect transistors
TFETs
Thin film transistors
Heterojunction bipolar transistors
Double heterojunction bipolar transistors
Millimeter wave transistors
Phototransistors
Static induction transistors

Superconductivity

Bean model
Critical current density
Flux pinning
Superconducting devices
Josephson junctions
SQUIDs
Superconducting coils
Superconducting magnets
Superconducting microwave devices
Superconducting photodetectors
Superconducting films
Superconducting thin films
Superconducting integrated circuits
Superconducting magnetic energy storage
Superconducting materials
Granular superconductors
High-temperature superconductors
Yttrium barium copper oxide
Multifilamentary superconductors
Niobium-tin
Superconducting filaments
Superconducting wires
Multifilamentary superconductors
Type II superconductors
Superconducting transition temperature
Systems engineering and theory

- Adaptive systems
  - Adaptive control
  - Cognitive radar
  - Line enhancers
- Multi-agent systems
  - Collaborative intelligence
  - Variable structure systems
- Capability engineering
- Complex systems
- Configuration management
- Failure state
- Hierarchical systems
  - Multilevel systems
- Integrated design
- Interface management
- Military systems
  - Military control
  - Military robotics
- Modeling
  - Analytical models
  - Common Information Model (computing)
  - Atmospheric modeling
  - Brain modeling
  - Building information management
  - Computational modeling
    - Agent-based modeling
    - Computational cultural modeling
    - Computational materials science
    - Reversible computing
    - Context modeling
  - Data models
    - Data-driven modeling
    - Metadata
  - Data-driven modeling
  - Deformable models
  - Digital elevation models
  - Emulation
    - Graphical models
    - Green's function methods
    - Hidden Markov models
    - Input variables
    - Integrated circuit modeling
    - Cutoff frequency
    - Inverse problems
    - Deconvolution
    - Load modeling
  - Mathematical models
    - Mathematical analysis
    - Metamodeling
    - Mobility models
    - Numerical models
    - Object oriented modeling
    - Power system modeling
    - Load modeling
    - Process modeling
    - Semiconductor device modeling
    - Semiconductor process modeling
    - Signal representation
    - Simulation
    - Computer simulation
    - Digital simulation
    - Hardware-in-the-loop simulation
    - Human in the loop
    - Medical simulation
    - Mixed reality
    - Quantum simulation
    - Serious games
    - Systems simulation
    - Solid modeling
    - System identification
    - Systems modeling
    - Threat modeling
    - Multidimensional systems
    - Network systems
    - DC distribution systems
    - Physical design
    - Reduced order systems
    - Requirements engineering
    - Technical requirements
    - Requirements management
    - Service-oriented systems engineering
    - Solution design
    - Stochastic systems
    - System analysis and design
    - Asymptotic stability
    - Closed box
    - Control system analysis
    - State-space methods
    - Diakoptics
    - Distributed processing
    - Dew computing
    - Edge computing
    - Message passing
    - Sharding
    - Distributed vision networks
    - Fault detection
    - Fault tolerant systems
........Glass box
..............Interconnected systems
..............Botnet
..............Large-scale systems
........Lyapunov methods
........Open systems
............Open Access
............Open Educational Resources
............Physical layer
........Petri nets
........Physical design
........Robust control
........Scalability
........Scattering parameters
........Sequential analysis
............Zero correlation zone
........Sequential diagnosis
........Software prototyping
........Static analysis
........System dynamics
........System performance
............Cooperative caching
........System-level design
........Systems modeling
............Threat modeling
........Systems Modeling Language
........Task analysis
........Time factors
............Continuous time systems
............Discrete-time systems
............Time invariant systems
............Time-varying systems
........System implementation
........System improvement
........System integration
........System of systems
........Cyber-physical systems
............Digital twins
........System realization
........System validation
........System testing
............Model checking
........System verification
........System testing
............Model checking
........Systems architecture
........Deep architecture
............Deep learning
........Systems engineering education
........Systems operation
........Systems simulation
............Systems support
............Systems thinking
............Task analysis
............Technical management
............Maintenance management
............Technical planning

Systems, man, and cybernetics

........Behavioral sciences
............Animal behavior
............Cognition
............Activity recognition
............Cognitive load
............Cognitive neuroscience
............Cognitive processes
............Commonsense reasoning
............Self-aware
............Consumer behavior
............Neuromarketing
............Self-service
............Psychiatry
............Mental disorders
............Psychology
............Active perception
............Emotional responses
............Industrial psychology
............Mental health
............Mood
............Neuropsychology
............Psychometric testing
............Social intelligence
............Biological control systems
............Biomarkers
............Molecular biomarkers
............Computational linguistics
............Machine translation
............Sentiment analysis
............Cybernetics
............Adaptive systems
............Adaptive control
............Cognitive radar
............Line enhancers
............Multi-agent systems
............Variable structure systems
............Cognitive informatics
............Cognitive science
............Human intelligence
............Problem-solving
............Control theory
............Control nonlinearities
Iterative learning control
Obeservability
Decision theory
Decision trees
TOPSIS
Econophysics
Emergent phenomena
Intelligent control
Feedforward systems
Neurocontrollers
Linear feedback control systems
Frequency locked loops
Phase locked loops
State feedback
Tracking loops
Ergonomics
Job design
Smart spaces
User experience
Cyberbullying
Human factors
Anthropomorphism
Human augmentation
Human image synthesis
Human intelligence
Digital intelligence
Hyper-intelligence
Mental health
Technology acceptance model
Identification of persons
Biometrics (access control)
Face recognition
Fingerprint recognition
Gait recognition
Iris recognition
Keystroke dynamics
Palmprint recognition
Face recognition
Fingerprint recognition
Handwriting recognition
Forgery
Speaker recognition
Speech recognition
Automatic speech recognition
Personal voice assistants
Speech analysis
Man-machine systems
Digital intelligence
Extended reality
Interactive systems
External stimuli
Pervasive computing
Ubiquitous computing
Context-aware services
Wearable computers
Smart glasses
Wearable Health Monitoring Systems
Posthuman
Teleworking
Transhuman
User interfaces
Audio user interfaces
Brain-computer interfaces
Data visualization
Graph drawing
Isosurfaces
Emotion recognition
Exoskeletons
Graphical user interfaces
Avatars
Human computer interaction
Affective computing
Chatbots
Extended reality
Gaze tracking
Head-mounted displays
Head-up displays
Human activity recognition
Human in the loop
Immersive experience
Telepresence
Telexistence
Human-robot interaction
Social robots
Human-vehicle systems
Smart cards

Ultrasonics, ferroelectrics, and frequency control
Ferroelectric materials
Ferroelectric films
Relaxor ferroelectrics
Frequency control
Automatic frequency control
Tunable circuits and devices
RLC circuits
Tuned circuits
Tuning
Laser tuning
Optical tuning
...Tuners
...Piezoelectricity
......Piezoelectric effect
......Piezoelectric polarization
...Pyroelectricity
...Ultrasonic imaging
......Ultrasonography
.........Sonogram
....Ultrasonic transducers

Vehicular and wireless technologies

...Automotive engineering
......Automotive applications
......Automotive control
......Automotive electronics
......Power steering
......Vehicle crash testing
......Vehicle detection
.........License plate recognition
......Vehicle driving
.........Autonomous driving
......Vehicle dynamics
.........Rollover
......Vehicle safety
.........Advanced driver assistance systems
.........Lane departure warning systems
.........Lane detection
...Land mobile radio equipment
......Mobile antennas
...Navigation
......Aircraft navigation
......Course correction
......Dead reckoning
......Indoor navigation
......Inertial navigation
......Marine navigation
......Radio navigation
......Satellite navigation systems
.........Global navigation satellite system
.........Global Positioning System
.........Satellite constellations
......Sonar navigation
...Propulsion
......Aerospace propulsion
......Aircraft propulsion
.........Propellers
......Electromagnetic launching
.........Colguns
.........Railguns

....Electrothermal launching
....Rockets
...Vehicles
......Connected vehicles
......Hydrogen powered vehicles
......Hypersonic vehicles
......Intelligent vehicles
.........Autonomous vehicles
.........Vehicle-to-everything
......Internet of Vehicles
...Land vehicles
.........Bicycles
.........Electric vehicles
.........Road vehicles
......Military vehicles
.........Remotely guided vehicles
.........Drones
.........Remotely guided underwater vehicles
.........Remotely piloted aircraft
......Space vehicles
.........Space shuttles
...Wireless sensor networks
.........Body sensor networks
.........Event detection