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 2015 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
Satellites
Artificial satellites
Earth Observing System
Low earth orbit satellites
Moon
Space stations
Space technology
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
Guns
Missiles
Nuclear weapons

Projectiles
Radar
Airborne radar
Bistatic radar
Cognitive radar
Doppler radar
Ground penetrating radar
Laser radar
Meteorological radar
Millimeter wave radar
Multistatic radar
MIMO radar
Passive 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
Sensor systems
Gunshot detection systems
Sonar
Sonar applications
Sonar detection
Sonar measurements
Sonar equipment
Synthetic aperture sonar
Telemetry

Biomedical telemetry

Antennas and propagation

Antennas

Antenna accessories

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

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

Millimeter wave propagation

Optical propagation

Optical surface waves

Optical waveguides

Propagation constant

Propagation losses

Radio propagation

Radiowave propagation

Submillimeter wave propagation

UHF propagation

Radio astronomy

Broadcast technology

Broadcasting

Digital audio broadcasting

Digital audio players

Digital Radio Mondiale

Digital multimedia broadcasting

Digital video broadcasting

Radio broadcasting

Frequency modulation

Radio networks

Satellite broadcasting

TV 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 integrated circuits
BiCMOS integrated circuits
Bipolar transistor 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 circuit
Central Processing Unit
Stripboard circuit
Equivalent circuits
Feedback
Feedback circuits
Negative feedback
Neurofeedback
Hybrid integrated circuits
Integrated circuits
Analog integrated circuits
Analog-digital integrated circuits
Application specific integrated circuits
Bipolar 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
Mixed analog digital 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
Logic arrays
Programmable logic arrays
Logic circuits
Combinational circuits
Logic arrays
Programmable logic arrays
Superconducting logic circuits
Magnetic circuits
Microprocessors
Automatic logic units
Biomimetics
Coprocessors
Microcontrollers
Microprocessor chips
Vector processors
Microwave circuits
Millimeter wave circuits
Millimeter wave integrated circuits
Millimeter wave integrated circuits
MIMICs
Monolithic integrated circuits
MIMICs
MMICs
MOSFET circuits
CMOSFET circuits
MOS integrated circuits
Power MOSFET
Multiplying circuits
Nonlinear circuits
Nonlinear network analysis
Passive circuits
Phase shifters
Phase transformers
Power dissipation
Power integrated circuits
Printed circuits
Flexible printed circuits
Programmable circuits
Field programmable analog arrays
Programmable logic arrays
Programmable logic devices
Programmable logic arrays
Programmable logic devices
Pulse circuits
Flip-flops
Radiation detector circuits
Rail to rail operation
Rail to rail amplifiers
Rail to rail inputs
Rail to rail outputs
Rectifiers
RLC circuits
Sampled data circuits
Sequential circuits
Silicon-on-insulator
Silicon on sapphire
Submillimeter wave circuits
Submillimeter wave integrated circuits
Summing circuits
Switched circuits
Switched capacitor circuits
Switching circuits
Choppers (circuits)
Logic circuits
Switching converters
Zero current switching
Zero voltage switching
Thin film circuits
Thyristor circuits
Time varying circuits
Trigger circuits
UHF circuits
UHF integrated circuits
Ultra large scale integration
Very large scale integration
Neuromorphics
Wafer scale integration
VHF circuits
Wafer scale integration
Contacts
Brushes
Contact resistance
Ohmic contacts
Filtering
Filters
Active filters
Anisotropic
Bragg gratings
Channel bank filters
Digital filters
Equalizers
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
Recommender systems
Integrated circuit technology
CMOS technology
.........CMOS process
.........Silicon on sapphire
.........Moore's Law
...Logic devices
.........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
.........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
.........Telephone sets
.........Vocoders
.........Transceivers
.........Radio transceivers
.........Transmitters
.........Auxiliary transmitters
.........Diversity methods
.........Neurotransmitters
.........Optical transmitters
.........Radio transmitters
.........Transmitting antennas
.........Transponders
.........TV equipment
.........Large screen displays
.........Video receivers
.........Video codecs
.........Video equipment
.........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
.........ARPA
.........Biomedical communication
.........Biomedical telemetry
.........Telemedicine
.........Broadband communication
.........B-ISDN
.........Broadband amplifiers
.........Communication networks
.........Central office
.........Cyberspace
.........Industrial communication
.........Relay networks
.........(telecommunications)
.........Software defined networking
.........Communication system control
.........Telecommunication control
.........Communication system security
.........Radio communication countermeasures
.........Communication system signaling
.........Received signal strength indicator
.........Communication system software
.........Streaming media
.........Communication system traffic
| Communication system traffic control | Passband |
| Computer networks | Portable media players |
| Ad hoc networks | SONET |
| Computer network management | Spread spectrum communication |
| Content distribution networks | Facsimile |
| Cyberspace | FDDI |
| Diffserv networks | Indoor communication |
| Domain Name System | Indoor environments |
| Ethernet networks | Internet |
| Google | Crowdsourcing |
| Heterogeneous networks | Instant messaging |
| Internet | Internet of things |
| Intserv networks | Internet telephony |
| IP networks | Internet topology |
| Metropolitan area networks | Middleboxes |
| Multiprocessor interconnection networks | Semantic Web |
| Network security | Social computing |
| Network servers | Web 2.0 |
| Next generation networking | Web services |
| Overlay networks | IP networks |
| Peer-to-peer computing | TCPIP |
| Software defined networking | ISDN |
| Storage area networks | B-ISDN |
| Token networks | Local area networks |
| Unicast | Wireless LAN |
| Virtual private networks | Machine-to-machine communications |
| Wide area networks | Metropolitan area networks |
| Cross layer design | Microwave communication |
| Data buses | Rectennas |
| Backplanes | Military communication |
| Data communication | Reconnaissance |
| Asynchronous communication | Millimeter wave communication |
| Asynchronous transfer mode | MIMO |
| Data buses | Rician channels |
| Data science | MISO |
| Data transfer | Mobile communication |
| Telecommunication buffers | 3G mobile communication |
| Telemetry | 4G mobile communication |
| Teleprinting | 5G mobile communication |
| Visible light communication | Ambient networks |
| Device-to-device communication | Dual band |
| Digital communication | Land mobile radio |
| Baseband | Mobile learning |
| DICOM | Mobile nodes |
| Digital audio broadcasting | Mobile radio mobility management |
| Digital images | Software radio |
| Digital multimedia broadcasting | Molecular communication |
| Digital video broadcasting | Multiaccess communication |
| DSL | Direct-sequence code-division |
| ISDN | multiple access |
| | Frequency division multiaccess |
Multicarrier code division multiple access
Subscriber loops
Time division multiple access
Time division synchronous code division multiple access
Multicast communication
Multicast VPN
Multimedia communication
Narrowband
NOMA
Optical fiber communication
FDDI
Free-space optical communication
Optical buffering
Optical fiber networks
Optical fiber subscriber loops
Optical interconnections
Optical packet switching
Optical wavelength conversion
Scheduling algorithms
SONET
Visible light communication
Personal communication networks
Protocols
Access protocols
Asynchronous transfer mode
Cryptographic protocols
Master-slave
Multicast protocols
Multiprotocol label switching
Routing protocols
Transport protocols
Wireless application protocol
Quality of service
Admission control
Radio communication
Baseband
Bluetooth
Indoor radio communication
Land mobile radio
Near field communication
Packet radio networks
Passband
Personal area networks
Radio broadcasting
Radio communication countermeasures
Radio frequency
Radio link
Radio spectrum management
Satellite communication
Satellite ground stations
Software radio
ZigBee
Regional area networks
WRAN
Routing
Wavelength routing
Satellite communication
Downlink
Satellite broadcasting
Satellite ground stations
Uplink
Satellite ground stations
SIMO
SISO
Spatial diversity
Submillimeter wave communication
Subscriber loops
Switching systems
Electronic switching systems
Switching frequency
Switching loss
Telecommunication switching
Synchronous digital hierarchy
telecommunications
Ambient intelligence
Feedback communications
IP networks
Radio access networks
Railway communication
Space communications
Telecommunication computing
Telecommunication network
topology
Telecommunication services
Telematics
Teleconferencing
Telegraphy
Telephony
Teleprinting
Teletext
Token networks
UHF communication
Underwater communication
Videophone systems
Videotex
Visual communication
Wide area networks
Wideband
Wireless communication
Cognitive radio
Cooperative communication
GSM
Open wireless architecture
Roaming
Smart devices
Spatial diversity
WiMAX
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 electronic 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
electrooptic modulators
Intensity modulation
Phase modulation
Continuous phase modulation
Differential phase shift keying
Phase shift keying
Pulse modulation
Pulse width modulation
Pulse width modulation inverters
Space vector pulse width modulation
Code division multiplexing
Demultiplexing
Frequency division multiplexing
Layer division multiplexing
Multiplexing equipment
Add-drop multiplexers
OFDM
Multiple access interference
OFDM modulation
Partial transmit sequences
Peak to average power ratio
Time division multiplexing
Wavelength division multiplexing
WDM networks
Network topology
Complex networks
Computer network reliability
Network architecture
Network function virtualization
Presence network agents
TV
Cable TV
Digital TV
Analog TV
HDTV
IPTV
Mobile TV
Three-dimensional television
Web TV
UHF technology
UHF antennas
UHF circuits
UHF integrated circuits
UHF communication
UHF devices
UHF integrated circuits
Ultra wideband technology

Ultra wideband antennas
Ultra wideband communication
Ultra wideband radar
VHF devices

Components, packaging, and manufacturing technology
Component architectures
Electronic components
Capacitors
Power capacitors
Varactors
Coils
Superconducting coils
Connectors
Plugs
Sockets
Diodes
Diode lasers
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
Quasi-doping
Semiconductor device doping
Semiconductor epitaxial layers
Semiconductor growth
Silicidation
Wafer bonding
Electronics packaging
Chip scale packaging
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
Context awareness
Cooperative systems
Decision support systems
Intelligent systems
Collective intelligence
Intelligent robots
Knowledge based systems
Expert systems
Mobile agents
Knowledge engineering
Inference mechanisms
Knowledge acquisition
Knowledge discovery
Knowledge representation
Learning (artificial intelligence)
Distance learning
Electronic learning
Learning systems
Backpropagation
Learning automata
Learning management systems
Semisupervised learning
Supervised learning
Unsupervised learning
Machine learning
Boosting
Statistical learning
Prediction methods
Linear predictive coding
Predictive coding
Predictive encoding
Predictive models

Autonomous mental development
Computational intelligence
Computational theory
Computational complexity
Concurrent computing
Greedy algorithms
Support vector machines
Evolutionary computation
Particle swarm optimization
Fuzzy systems
Fuzzy control
Fuzzy neural networks
Hybrid intelligent systems
Genetic algorithms
Logic
Fuzzy logic
Fuzzy cognitive maps
Takagi-Sugeno model
Multivalued logic
Probabilistic logic
Sufficient conditions
Machine intelligence
Pattern analysis
Neural networks
Artificial neural networks
Hebbian theory
Self-organizing feature maps
Biological neural networks
Cellular neural networks
Feedforward neural networks
Multilayer perceptrons
Multi-layer neural network
Neural network hardware
Radial basis function networks
Recurrent neural networks
Hopfield neural networks

Computers and information processing
Approximate computing
Computer applications
Affective computing

Application virtualization
Computer aided analysis
Computer aided engineering
Computer aided instruction
Learning management systems
Computer generated music
Computer integrated manufacturing
Control engineering computing
Green computing
High energy physics instrumentation computing
Linear particle accelerator
Knowledge management
Knowledge transfer
Medical information systems
Electronic medical records
Military computing
Mobile applications
Physics computing
Power engineering computing
Power system analysis computing
Publishing
Bibliometrics
Company reports
Desktop publishing
Electronic publishing
Open Access
Scientific publishing
Scientific computing
Telecommunication computing
Internetworking
Soft switching
Virtual enterprises
Virtual manufacturing
Virtual machining
Web sites
Facebook
MySpace
Uniform resource locators
Web design
YouTube
World Wide Web
Mashups
Computer architecture
Accelerator architectures
Data structures
Arrays
Binary decision diagrams
Null value
Octrees
Table lookup
Opportunistic software systems development
Parallel programming
Performance analysis
Programming profession
Robot programming
Computer security
Authentication
Computer crime
Counterfeiting
Computer hacking
Firewalls (computing)
Identity management systems
Permission
Computers
Analog computers
Calculators
Difference engines
Microcomputers
Portable computers
Workstations
Parallel machines
Supercomputers
Tablet computers
Wearable computers
Concurrency control
Processor scheduling
Scheduling algorithms
Data systems
Data acquisition
Fastbus
User-generated content
Data compression
Adaptive coding
Audio compression
Huffman coding
Source coding
Test data compression
Transform coding
Data conversion
Analog-digital conversion
Digital-analog conversion
Data engineering
Data handling
Data aggregation
Data assimilation
Data dissemination
Data encapsulation
Document handling
Merging
Sorting

Data processing
Associative processing
Business data processing
Data analysis
Data collection
Data integration
Data preprocessing
Data transfer
Information exchange
Spreadsheet programs
Text processing
Virtual enterprises
Data storage systems
Triples (Data structure)
Data warehouses
Database machines
Digital systems
Digital preservation
Digital rights management
Internet
Crowdsourcing
Instant messaging
Internet of things
Internet telephony
Internet topology
Middleboxes
Semantic Web
Social computing
Web 2.0
Web services
ISDN
B-ISDN
Local area networks
Wireless LAN
Metropolitan area networks
Token networks
Distributed computing
Client-server systems
Middleware
Servers
Collaborative work
Cooperative communication
Crowdsourcing
Social computing
Diffserv networks
Distributed databases
Distributed information systems
Distributed management
Publish-subscribe
Internet
Crowdsourcing
Instant messaging
Internet of things
Internet telephony
Internet topology
Middleboxes
Semantic Web
Social computing
Web 2.0
Web services
Metacomputing
Grid computing
Peer-to-peer computing
DNA computing
File servers
Hardware
Open source hardware
High performance computing
Image processing
Active shape model
Feature extraction
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 capture
Image coding
Image color analysis
Image decomposition
Image denoising
Image enhancement
Image filtering
Image fusion
Image generation
Plasma displays
Visual effects
Image recognition
Image edge detection
Image reconstruction
Image registration
Image representation
Image resolution
High-resolution imaging
Spatial resolution
Image restoration
Image sampling
Image segmentation
Image sequences
Image texture
Machine vision
Object recognition
Object segmentation
Morphological operations
Optical feedback
Smart pixels
Spatial coherence
Table lookup
Memory
Analog memory
Associative memory
Buffer storage
Computer buffers
Cache memory
Cache storage
Content addressable storage
Flash memories
Flash memory cells
Magnetic memory
Floppy disks
Hard disks
Memory management
Nonvolatile memory
Nonvolatile single electron 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
Mobile computing
Molecular computing
Multitasking
Parametric study
Open systems
Open Access
Public domain software
Open Educational Resources
Physical layer
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
Character recognition
Clustering methods
Pattern clustering
Data mining
Association rules
Data privacy
Text analysis
Text mining
Web mining
Face recognition
Fingerprint recognition
Gesture recognition
Sign language
Handwriting recognition
Forgery
Pattern matching
Image matching
Speech recognition
Automatic speech recognition
Speech analysis
Text recognition
Pervasive computing
Ubiquitous computing
Context-aware services
Wearable computers
Petascale computing
Platform virtualization
Probabilistic computing
Probability computing
Quantum computing
Quantum cellular automata
Real-time systems
WebRTC
Software
Application software
Embedded software

Invasive software
Computer viruses
Computer worms
Middleware
Mediation
Message-oriented middleware
Web services
Open source software
Optical character recognition software
Public domain software
Software agents
Agent-based modeling
Autonomous agents
Intelligent agents
Software as a service
Software debugging
Software design
Software maintenance
Software packages
EMTDC
MATLAB
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
Programming environments
Reasoning about programs
Runtime
Dynamic compiler
Runtime environment
Software architecture
Client-server systems
Microarchitecture
Representational state transfer
Software libraries
Software product lines
System recovery
...Checkpointing
...Core dumps
...Debugging
...Time sharing computer systems
...Virtual machine monitors

Consumer electronics
...Ambient intelligence
...Audio systems
...Audio tapes
...Audio-visual systems
...Auditory displays
...Headphones
...Loudspeakers
...Microphones
...Microphone arrays
...Pitch control (audio)
...Portable media players
...Sonification
...Home automation
...Portable media players
...Refrigerators
...Smart homes
...Washing machines
...Home computing
...Low-power electronics
...Microwave ovens
...Multimedia systems
...Multimedia communication
...Multimedia computing
...Multimedia databases

Control systems
...Automatic control
...Power generation control
...Automatic generation control
...Bidirectional control
...Brakes
...CAMAC
...Centralized control
...Closed loop systems
...Control design
...Control engineering
...Control equipment
...Actuators
...Electrostatic actuators
...Hydraulic actuators
...Intelligent actuators
...Microactuators
...Piezoelectric actuators
...Pneumatic actuators
...Fasteners
...Microcontrollers
...Regulators
...Servosystems
...Servomotors
...Switches
...Contactors
...Microswitches
...Optical switches
...Switchgear
...Circuit breakers
...Interrupters
...Relays
...Telecontrol equipment
...Thermostats
...Control system synthesis
...Controllability
...Cruise control
...Decentralized 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
...Fluid flow control
...Fluidics
...Microfluidics
...Nanofluidics
...Gaze tracking
...Electrooculography
...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
Education

Career development
Continuing education
Jobs listings
Mentoring
Education courses
Curriculum development
Open Educational Resources
Educational institutions
Educational programs
Accreditation
Continuing education
Pre-college programs
Scholarships
Self-study courses
Seminars
Webinars
STEM
Tutorials
Educational technology
Computer aided instruction
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
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 fields
...Electromagnetic forces
...Electromagnetic refraction
...Permeability
...Spark gaps
...Time-domain analysis
...Electromagnetic coupling
...Mutual coupling
...Optical coupling
...Electromagnetic devices
...Electromagnetic induction
...Eddy currents
...Inductive power transmission
...Electromagnetic metamaterials
...Terahertz metamaterials
...Electromagnetic radiation
...Correlators
...Electromagnetic wave absorption
...Frequency
...Gamma-rays
...Line-of-sight propagation
...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
Electron devices
  ...Cathode ray tubes
  ...Electron guns
  ...Electron multipliers
  ...Electron tubes
  ......Field emitter arrays
  ......Klystrons
  ......Magnetrons
  ......Thyratrons
  ...Mechatronics
  ......Field emitter arrays
  ......Biomechatronics
  ...Micromachined systems
  ......Microelectromechanical devices
  ......Microfluidics
  ......Micromechanical devices
  ......Biomedical microelectromechanical systems
  ......Fluidic microsystems
  ......Microfabrication
  ......Photoelectricity
  ......Photovoltaic effects
  ......Shunts (electrical)
  ......Photovoltaic cells
  ......Light trapping
  ......Quantum computing
  ......Quantum cellular automata
  ......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 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
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
Tunneling magneto-resistance
Vacuum technology
Photomultipliers
Vacuum electronics
Vacuum systems
Gettering

Electronic design automation and methodology
Design automation
CADCAM
Rapid prototyping (industrial)
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
Graphics
Animation
Art
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
Technical drawing
Time to market
User centered design
Virtual prototyping

Engineering - general
Acoustical engineering
Agricultural engineering
Chemical engineering
Civil engineering
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
Mechanical engineering
Mechanical power transmission
Torque converters
Mechanical systems
Mechanical energy
Micromechanical devices
Precision engineering
Production engineering
Production planning
Capacity planning
Materials requirements planning
Process planning
Research and development
Reverse engineering
Sanitary engineering
Standardization
Formal specifications
Guidelines
Standards
Standards categories
Standards organizations
Standards publications
Thermal engineering

Engineering in medicine and biology
Bioinformatics
Biology
Biochemistry
Amino acids
Biochemical analysis
Peptides
Proteins
Biodiversity
Biogeography
Bioelectric phenomena
Electric shock
Biological cells
Cells (biology)
Chromosome mapping
Fibroblasts
RNA
Stem cells
Biological information theory
Biological processes
Biological interactions
Chronobiology
Circadian rhythm
Coagulation
Symbiosis
Biological system modeling
Biological systems
Anatomy
Molecular communication
Organisms
Biology computing
Biophotonics
Biophysics
Aerospace biophysics
Biomagnetics
Cellular biophysics
Molecular biophysics
Cryobiology
Evolution (biology)
Memetics
Phylogeny
Genetics
DNA
Gene therapy
Genetic communication
Genetic expression
Genetic programming
Genomics
Microinjection
Nanobiotechnology
DNA computing
Physiology
Predator prey systems
Synthetic biology
Systematics
Systems biology
Vegetation
Crops
Marine vegetation
Zoology
Animals
Biomedical communication
Biomedical telemetry
Telemedicine
Biomedical computing
Biomedical informatics
Medical expert systems
Medical information systems
Electronic medical records
Biomedical engineering
Bioprocesses
Biological interactions
Chronobiology
Circadian rhythm
Coagulation
Symbiosis
Biological system modeling
Biological systems
Anatomy
Molecular communication
Organisms
Biology computing
Biophotonics
Biophysics
Aerospace biophysics
Biomagnetics
Cellular biophysics
Molecular biophysics
Cryobiology
Evolution (biology)
Assistive devices
Wheelchairs
Biomedical electrodes
Biomedical telemetry
Biomedical transducers
Catheters
Cybercare
Endoscopes
Gerontechnology
Hypodermic needles
Implants
Auditory implants
Brainstem implants
Cochlear implants
Microelectronic implants
Intracranial pressure sensors
Lithotriptors
Pacemakers
Stethoscope
Surgical instruments
Laparoscopes
Biomedical imaging
Angiocardiology
Angiography
Biomedical optical imaging
Cardiology
Echocardiography
Electrocardiography
Phonocardiography
DICOM
Elastography
Encephalography
Mammography
Medical diagnostic imaging
Anatomical structure
Molecular imaging
Phantoms
Photoacoustic imaging
Bionanotechnology
Bioterrorism
Computational biology
Computational biochemistry
Computational biophysics
Computational systems biology
Genetic engineering
Medical services
Assisted living
Ambient assisted living
Catheterization
Clinical diagnosis
Cybercare
Health information management
Hospitals
In vitro
In vitro fertilization
In vivo
Medical conditions
Aneurysm
Arteriosclerosis
Arthritis
Atrophy
Blindness
Cancer
Cataracts
Deafness
Diabetes
Diseases
Epilepsy
Hemorrhaging
Hypertension
Hyperthermia
Influenza
Injuries
Kidney stones
Pregnancy
Retinopathy
Sleep apnea
Thrombosis
Tumors
Medical diagnosis
Autopsy
Bronchoscopy
Colonography
Computer aided diagnosis
Medical signal detection
Nanomedicine
Plethysmography
Sensitivity and specificity
Medical tests
Amniocentesis
Biopsy
Cancer detection
Colonoscopy
Pregnancy test
Medical treatment
Anesthesia
Angioplasty
Brachytherapy
Brain stimulation
Chemotherapy
Clinical trials
Cryotherapy
Defibrillation
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Embolization
Fibrillation
Geriatrics
Hepatectomy
Hospitals
Hyperthermia
Lithotripsy
Magnetic stimulation
Neuromuscular stimulation
Neutron capture therapy
Noninvasive treatment
Orthopedic procedures
Orthotics
Patient rehabilitation
Pharmaceuticals
Surgery
Occupational medicine
Prosthetics
Artificial biological organs
Artificial limbs
Prosthetic hand
Prosthetic limbs
Visual prosthesis
Public healthcare
Sensory aids
Hearing aids
Vaccines
X-rays
X-ray applications
X-ray detection
X-ray scattering
X-ray tomography
Medicine
Cardiology
Cardiac tissue
Dermatology
Gastroenterology
Gerontology
Gerontechnology
Gynecology
Neonatology
Neurology
Oncology
Pathology
Pathological processes
Pediatrics
Nuclear medicine

Geoscience and remote sensing
Business data processing
Entrepreneurship
Industrial relations
Management
Asset management
Best practices
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
Government
Sociotechnical systems
Commercialization
Consortia
Economics
Costs
Cost benefit analysis
Econometrics
Economic forecasting
Economic indicators
Share prices
Electronic commerce
Environmental economics
Carbon tax
Exchange rates
Fuel economy
International trade
Macroeconomics
Privatization
Microeconomics
Economies of scale
Industrial economics
Monopoly
Oligopoly
Power generation economics
Electricity supply industry
deregulation
Profitability
Stock markets
Supply and demand
Trade agreements
Venture capital
Virtual enterprises
Innovation management
Creativity
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Copyright protection
Digital rights management
Intellectual property
Software protection
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Censorship
Commercial law
Consumer protection
Contract law
Criminal law
Employment law
Forensics
Law enforcement
Patent law
Trademarks
Law enforcement
Patents
Product liability
Warranties
Software protection
Trademarks
Market research
Planning
Meeting planning
Schedules
Strategic planning
Technical planning
Technology planning
Product development
Graphical user interfaces
Avatars
Product customization
Product life cycle management
Prognostics and health management
Software product lines
Time to market
Project engineering
Scheduling
Adaptive scheduling
Dynamic scheduling
Job shop scheduling
Single machine scheduling
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
Wetlands
...Land surface temperature
...Photometry
...Radar
...Airborne radar
...Bistatic radar
...Cognitive radar
...Doppler radar
...Ground penetrating radar
...Laser radar
...Meteorological radar
...Millimeter wave radar
...Multistatic radar
...MIMO radar
...Passive 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
...Radiometry
...Microwave radiometry
...Radiometers
...Spectroradiometers
...Remote sensing
...Hyperspectral sensors
...Hyperspectral imaging
...Passive microwave remote sensing
...Remote monitoring
...Terrain mapping
...Digital elevation models
...Terrestrial atmosphere
...Clouds
...Global warming
...Ionosphere
...Magnetoosphere
...Vegetation mapping

IEEE organizational topics
...IEEE activities
...Awards activities
...Prize paper awards
...Service awards
...Student awards
...Technical field awards
...Conference activities
...Corporate activities
...Educational activities
...Intersociety activities
...Local activities
...Member and Geographic activities
...Professional activities
...Publishing activities
...Standards activities
...Student activities
...Technical activities
...United States activities
...Volunteer activities
...IEEE entities
...Boards
...Center for the History of Electrical Engineering
...Chapters
...Committees
...Communities
...Councils
...IEEE Computer Society Press
...IEEE Foundation
...IEEE Press
...Regions
...Sections
...Societies
...IEEE governance
...Bylaws
...Constitution
...IEEE Policy and Procedures
...IEEE Staff
...Mission and Vision
...IEEE indexing
...Awards
...Book reviews
...CD-ROM reviews
...Editorials
...IEEE
...Interviews
...Obituaries
...Software reviews
...Special issues and sections
...Tutorials
Video reviews
IEEE members
Associate members
Fellows
Life members
Senior members
Student members
IEEE news
Chapter news
Region news
Section news
Society news
IEEE products
IEEE audio tapes
IEEE catalogs
IEEE educational products
IEEE merchandise
IEEE publications
IEEE books
IEEE conference proceedings
IEEE directories
IEEE journals
IEEE magazines
IEEE newsletters
IEEE online publications
IEEE standards 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
Magnetic resonance elastography
Magneto electrical resistivity imaging technique
Microscopy
Atomic force microscopy
Electron microscopy
Photoelectron microscopy
Scanning electron microscopy
Transmission electron microscopy
Scanning probe microscopy
Scanning thermal microscopy
Microwave imaging
Motion pictures
Multispectral imaging
Nuclear imaging
Energy resolution
Optical imaging
Talbot effect
Thermoreflectance imaging
Photography
Cinematography
Digital photography
Image forensics
Photomicrography
Radiation imaging
Radiography
Diagnostic radiography
Stereo vision
Stereo image processing
Tomography
Computed tomography
Industrial electronics
...Assembly systems
...Flexible electronics
...Robotic assembly
...Computer aided manufacturing
......CADCAM
......Rapid prototyping (industrial)
......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
......Scheduling
......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
......Automatic testing
......Automatic test pattern generation
......Ring generators
......Benchmark testing
......Built-in self-test
......Circuit testing
......Integrated circuit measurements
......Electronic equipment testing
......Immunity testing
......Error analysis
......Bit error rate

Industry applications
...Accident prevention
......Accidents
......Aerospace accidents
......Electrical accidents
......Industrial accidents
......Marine accidents
......Railway accidents
......Road accidents
...Chemical technology
......Chemical reactors
......Bioreactors
......Continuous-stirred tank reactor
...........Ignition
...........Chemical sensors
...........Crystallizers
...........Distillation equipment
...........Fluidization
...........Pharmaceutical technology
...........Vitrification
...........Cryogenics
....Electrochemical devices
...........Amperometric sensors
...........Batteries
...........Lithium batteries
...........Nickel cadmium batteries
...........Battery management systems
...........Fuel cells
...........Supercapacitors
....Electrochemical processes
....Electromechanical systems
...........Cruise control
...........Electromechanical devices
...........Armature
...........SAW filters
....Electrostatic devices
....Electrostatic precipitators
....Electrostatic processes
...........Aerosols
...........Electrophotography
...........Electrostatic analysis
...........Electrostatic induction
...........Electrostats
...........Electrostatic levitation
...........Particle charging
...........Particle production
...........Space charge
...........Surface charging
...........Triboelectricity
...........Triboelectricity
....Engines
...........Heat engines
...........Steam engines
...........Stirling engines
...........Internal combustion engines
...........Diesel engines
...........Ignition
...........Jet engines
....Environmental management
...........Biodegradation
...........Biodegradable materials
...........Land use planning
...........Pest control
...........Pollution control
...........Recycling
...........Renewable energy sources
...........Biomass
...........Sustainable development
...........Waste management
...........Waste disposal
...........Waste handling
...........Waste recovery
...........Waste reduction
...........Water conservation
...........Desalination
...........Water resources
...........Reservoirs
....Food technology
...........Food preservation
...........High-temperature techniques
...........Rapid thermal processing
....Industrial engineering
...........Industrial communication
....Industries
...........Agriculture
...........Agricultural products
...........Aquaculture
...........Fertilizers
...........Greenhouses
...........Irrigation
...........Architecture
...........Banking
...........Online banking
...........Beverage industry
...........Chemical industry
...........Coal industry
...........Communication industry
...........Computer industry
...........Construction
...........Buildings
...........Green buildings
...........Modular construction
...........Prefabricated construction
...........Construction industry
...........Prefabricated construction
...........Defense industry
...........Electrical engineering industry
...........Entertainment industry
...........Gas industry
...........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
Toy industry
Transportation industry
Wood industry
Inspection
Automatic optical inspection
Machinery
Agricultural machinery
Ball bearings
Belts
Drives
Hydraulic drives
Motor drives
Variable speed drives
Electric machines
AC machines
Alternators
Brushless machines
Compressors
Conductors
DC machines
Electric fences
Generators
Permanent magnet machines
Rotating machines
Rots
Stators
Washing machines
Fans
Furnaces
Blast furnaces
Kilns
Gears
Hydraulic systems
Electrohydraulics
Hydraulic equipment
Hydraulic fluids
Machine components
Air cleaners
Belts
Cams
Engine cylinders
Impellers
Intake systems
Manifolds
Mechanical splines
Pistons
Rotors
Shafts
Valves
Motors
AC motors
Brushless motors
Commutation
DC motors
Electric motors
Hysteresis motors
Induction motors
Micromotors
Permanent magnet motors
Servomotors
Traction motors
Universal motors
Printing machinery
Pumps
Fuel pumps
Heat pumps
Micropumps
<table>
<thead>
<tr>
<th>Textile machinery</th>
<th>Glass manufacturing</th>
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<tbody>
<tr>
<td>Spinning machines</td>
<td>Integrated manufacturing systems</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Intelligent manufacturing systems</td>
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<tr>
<td>Assembly</td>
<td>Job production systems</td>
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<tr>
<td>Fitting</td>
<td>Joining processes</td>
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<td>Microassembly</td>
<td>Layered manufacturing</td>
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<td>Preforms</td>
<td>Lean production</td>
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<td>Soldering</td>
<td>Manufacturing processes</td>
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<td>Assembly systems</td>
<td>Mass production</td>
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<td>Flexible electronics</td>
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<td>Sheet metal processing</td>
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<td>Fabrication</td>
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<td>Bonding processes</td>
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<td>Tolerance analysis</td>
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<td>Optical device fabrication</td>
<td>Packaging</td>
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<td>Soldering</td>
<td>Bagging</td>
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<td>Nanolithography</td>
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<td>Multichip modules</td>
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<td>Plastic packaging</td>
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<td>X-ray lithography</td>
<td>Wrapping</td>
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<td>Manufactured products</td>
<td>Paper technology</td>
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<td>Ceramic products</td>
<td>Production</td>
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<td>Chemical products</td>
<td>Ball milling</td>
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<td>Electrical products</td>
<td>Embossing</td>
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<td>Fuels</td>
<td>Dairy products</td>
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<td>Glass products</td>
<td>Fats</td>
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<td>Mechanical products</td>
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<td>Metal products</td>
<td>Group technology</td>
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<td>Paper products</td>
<td>Injection molding</td>
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<td>Annealing</td>
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<td>Casting</td>
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<td>Coatings</td>
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<td>Windows</td>
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<td>Manufacturing systems</td>
<td>Etching</td>
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<td>Agile manufacturing</td>
<td>Heat treatment</td>
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<td>Automobile manufacture</td>
<td>Joining processes</td>
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<td>Batch production systems</td>
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<td>Machining</td>
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<td>Cellular manufacturing</td>
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<td>Flow production systems</td>
<td>Plasma materials processing</td>
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<td>Food manufacturing</td>
<td>Plating</td>
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<tr>
<td>Forging</td>
<td>Pressing</td>
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</tbody>
</table>
............Punching
............Refining
............Shearing
............Smelting
............Softening
............Swaging
............Mechanical products
............Automotive components
............Axles
............Bellows
............Blades
............Brakes
............Couplings
............Fasteners
............Flanges
............Gears
............Hoses
............Machine components
............Mechanical guides
............Needles
............Orifices
............Pistons
............Seals
............Springs
............Steering systems
............Structural shapes
............Suspensions
............Tires
............Vents
............Wheels
............Process planning
............Business process integration
............Business process management
............Cause effect 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 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
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............Retardants
............Production systems
............Assembly systems
............Exhaust systems
............Intelligent manufacturing systems
............Lean production
............Manufacturing systems
............Steering systems
............Productivity
............Shafts
............Camshafts
............Springs
............Suspensions
............Shock absorbers
............Transfer molding
............Safety
............Aerospace safety
............Air safety
............Domestic safety
............Emergency services
............Explosion protection
............Hazards
............Biohazards
............Chemical hazards
............Explosions
............Fires
............Flammability
............Floods
Information theory

....Audio coding
....Biological information theory
....Channel coding
....Block codes
....Linear codes
....Combined source-channel coding
....Turbo codes
....Codes
....Binary codes
....Reflective binary codes
....Convolutional codes
....Cyclic redundancy check codes
....Error correction codes
....Reed-Solomon codes
....Parity check codes
....Iterative decoding
....Product codes
....Bar codes
....Space-time codes
....Communication channels
....Channel allocation
....Channel capacity
....Channel estimation
....Channel models
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Infrared surveillance
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...Electrooptic modulators
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...Atom lasers
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...Magneto optic recording
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...Laser tuning
...Quantum dot lasers
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...Semiconductor laser arrays
...Semiconductor optical amplifiers
...Surface emitting lasers
...Solid lasers
...Microchip lasers
...Quantum well lasers
...Semiconductor lasers
...Surface emitting lasers
...Surface emitting lasers

Intelligent transportation systems

...Automated highways
...Autonomous automobiles
...Geographic information systems
...Geospatial analysis
...Gunshot detection systems
...Intelligent vehicles
...Advanced driver assistance systems
...Computational transportation science
...Connected vehicles
...Vehicle routing
...Vehicular automation
...Wireless Access in Vehicular Environments
...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
...Transportation
...Air transportation
...Aircraft
...Airports
...Land transportation
...Rail transportation
...Road transportation
...Public transportation
...Vehicles
...Land vehicles
...Military vehicles
...Remotely operated vehicles
...Space vehicles

Test equipment
Automatic test equipment
Test facilities
Anechoic chambers
Laboratories
Large Hadron Collider
Open area test sites
TEM cells

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........Optics
.............Adaptive optics
.............Birefringence
.............Brightness
.............Brightness temperature
............Color
.............Pigmentation
............Electron optics
............Extinction coefficients
.............Extinction ratio
............Fiber optics
.............Fiber nonlinear optics
.............Optical fibers
............Fluorescence
............Four-wave mixing
............Geometrical optics
............Ray tracing
............Integrated optics
............Light sources
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............Fast light
.............Luminescent devices
.............Phosphors
............Slow light
............Stray light
............Superluminescent diodes
............Ultraviolet sources
............Luminescence
.............Bioluminescence
.............Electroluminescence
............Fluorescence
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Aluminum alloys
Aluminum compounds
Americium
Antimony
Arsenic
Arsenic compounds
Astatine

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Beryllium
Boron
Boron alloys
Bromine
Bromine compounds
Californium
Carbon
Cerium
Cesium
Chlorine
Chlorine compounds
Curium
Darmstadtium
Dysprosium
Europium
Dysprosium compounds
Fluorine
Fluorine compounds
Francium
Gadolinium
Gadolinium oxide
Hafnium
Hafnium compounds
Helium
Holmium
Hydrogen
Deuterium
Iodine
Iodine compounds
Iridium
Isotopes
Krypton
Lutetium
Mercury (metals)
Molybdenum
Neon
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Osmium
Oxygen
Phosphorus
Plutonium
Polonium
Potassium
Praseodymium
Promethium
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Radon
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<td>Epoxy resins</td>
<td></td>
</tr>
<tr>
<td>Resists</td>
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<tr>
<td>Resists</td>
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<tr>
<td>Semiconductor materials</td>
<td></td>
</tr>
<tr>
<td>Amorphous semiconductors</td>
<td></td>
</tr>
<tr>
<td>Elemental semiconductors</td>
<td></td>
</tr>
<tr>
<td>Gallium</td>
<td>Gallium arsenide</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------</td>
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<tr>
<td>III-V semiconductor materials</td>
<td>II-VI semiconductor materials</td>
</tr>
<tr>
<td>Indium phosphide</td>
<td>Magnetic semiconductors</td>
</tr>
<tr>
<td>Semiconductor superlattices</td>
<td>Silicon</td>
</tr>
<tr>
<td>Substrates</td>
<td>Wide band gap semiconductors</td>
</tr>
<tr>
<td>Solids</td>
<td>Young's modulus</td>
</tr>
<tr>
<td>Granular superconductors</td>
<td>High-temperature superconductors</td>
</tr>
<tr>
<td>Nb-Ti</td>
<td>Type II superconductors</td>
</tr>
<tr>
<td>Terahertz metamaterials</td>
<td>Textiles</td>
</tr>
<tr>
<td>Fabrics</td>
<td>Textile fibers</td>
</tr>
<tr>
<td>Waste materials</td>
<td>Effluents</td>
</tr>
<tr>
<td>Industrial waste</td>
<td>Radioactive waste</td>
</tr>
<tr>
<td>Wastewater</td>
<td>Waste materials</td>
</tr>
<tr>
<td>Materials science and technology</td>
<td>Absorption</td>
</tr>
<tr>
<td>Chemical analysis</td>
<td>Activation analysis</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Electronic noses</td>
</tr>
<tr>
<td>Contamination</td>
<td>Surface contamination</td>
</tr>
<tr>
<td>Filtration</td>
<td>Microfiltration</td>
</tr>
<tr>
<td>Impurities</td>
<td>Semiconductor impurities</td>
</tr>
<tr>
<td>Cleaning</td>
<td>Decontamination</td>
</tr>
<tr>
<td>Materials handling equipment</td>
<td>Remote handling</td>
</tr>
<tr>
<td>Doping</td>
<td>Firing</td>
</tr>
<tr>
<td>Sputtering</td>
<td>Materials reliability</td>
</tr>
<tr>
<td>Accelerated aging</td>
<td>Acoustic testing</td>
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<tr>
<td>Bonding forces</td>
<td>Delamination</td>
</tr>
<tr>
<td>Nondestructive testing</td>
<td>Microstructure</td>
</tr>
<tr>
<td>Photonic crystals</td>
<td>Pigmentation</td>
</tr>
<tr>
<td>Separation processes</td>
<td>Particle separators</td>
</tr>
<tr>
<td>Surfaces</td>
<td>Corrosion</td>
</tr>
<tr>
<td>Rough surfaces</td>
<td>Surface impedance</td>
</tr>
<tr>
<td>Surface resistance</td>
<td>Surface roughness</td>
</tr>
<tr>
<td>Surface structures</td>
<td>Surface tension</td>
</tr>
<tr>
<td>Surface topography</td>
<td>Surface treatment</td>
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</tbody>
</table>

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Alloying

Intermetallic

Shape memory alloys

Aluminum

Aluminum alloys

Aluminum compounds

Barium

Barium compounds

Bismuth

Boron

Boron alloys

Cadmium

Cadmium compounds

Calcium

Calcium compounds

Chromium

Chromium alloys

Cobalt

Cobalt alloys

Copper

Copper alloys

Copper compounds

Digital alloys

Erbium

Gallium

Gallium alloys

Germanium

Germanium alloys

Gold

Gold alloys

Hafnium

Hafnium compounds

Indium

Iron

Cast iron

Iron alloys

Lanthanum

Lanthanum compounds

Lead

Lead isotopes

Lithium

Lithium compounds

Magnesium

Magnesium compounds

Manganese

Manganese alloys

Mercury (metals)

Metallization

Integrated circuit metallization

Neodymium

Neodymium alloys

Neodymium compounds

Nickel

Nickel alloys

Nickel compounds

Niobium

Niobium alloys

Niobium compounds

Palladium

Platinum

Platinum alloys

Rare earth metals

Samarium

Samarium alloys

Silver

Steel

Strontium

Strontium compounds

Tin

Tin alloys

Tin compounds

Titanium

Titanium alloys

Titanium compounds

Titanium nitride

Tungsten

Yttrium

Yttrium compounds

Zinc

Zinc compounds

Mathematics

Accuracy

Algebra

Abstract algebra

Galois fields

Modules (abstract algebra)

Boolean algebra

Boolean functions

Linear algebra

Linear programming

Matrices

Vectors

Set theory

Fuzzy set theory

Fuzzy sets

Rough sets

Algorithms

Adaptive algorithms

Adaptation models

Algorithm design and analysis
Approximation algorithms
Backpropagation algorithms
Basis algorithms
Change detection algorithms
Classification algorithms
Clustering algorithms
Compression algorithms
Density estimation robust algorithm
Detection algorithms
Distributed algorithms
Dynamic programming
Filtering algorithms
Genetic algorithms
Heuristic algorithms
Inference algorithms
Machine learning algorithms
Matching pursuit algorithms
Maximum likelihood detection
MLFMA
Multicast algorithms
Parallel algorithms
Partitioning algorithms
Prediction algorithms
Projection algorithms
Pursuit algorithms
Signal processing algorithms
Software algorithms
Viterbi algorithm
Arithmetic
Digital arithmetic
Fixed-point arithmetic
Floating-point arithmetic
Azimuth
Azimuthal angle
Azimuthal component
Azimuthal current
Azimuthal harmonics
Azimuthal plane
Boundary value problems
Boundary conditions
Upper bound
Calculus
Differential equations
Differential algebraic equations
Navier-Stokes equations
Partial differential equations
Transfer functions
Integral equations
Probability density function
Level set
Closed-form solutions
Combinatorial mathematics
Graph theory
Bipartite graph
Optimal matching
Reachability analysis
Shortest path problem
Tree graphs
Steiner trees
Computational efficiency
Conformal mapping
Convergence
Convex functions
Cyclic redundancy check
cyclical redundancy check codes
Eigenvalues and eigenfunctions
Equations
Boltzmann equation
Difference equations
Integrodiifferential equations
Maxwell equations
Nonlinear equations
Bifurcation
Polynomials
Riccati equations
Estimation
Estimation error
Estimation theory
Cramer-Rao bounds
Maximum a posteriori estimation
Life estimation
Maximum likelihood estimation
Pose estimation
State estimation
Observers
Yield estimation
Euclidean distance
Hilbert space
Finite difference methods
Finite element analysis
Fourier series
Functional analysis
Geometry
Computational geometry
Fractals
Elliptic curves
Elliptic design
Ellipsoids
Information geometry
Surface topography
Nanotopography
Gradient methods
Graph theory
Bipartite graph
Optimal matching
Reachability analysis
Shortest path problem
Tree graphs
Harmonic analysis
Iterative methods
Expectation-maximization algorithms
Iterative algorithms
Belief propagation
Iterative closest point algorithm
Sum product algorithm
Iterative learning control
Kernel
Null space
Laplace equations
Lattices
Lattice Boltzmann methods
Limit-cycles
Linear matrix inequalities
Linear systems
Linearization techniques
Mathematical model
Mathematical analysis
Formal concept analysis
Fractional calculus
Modal analysis
Mathematical programming
Method of moments
Minimization
Minimization methods
Mode matching methods
Network theory (graphs)
Nonlinear equations
Bifurcation
Nonlinear systems
Chaos
Chaotic communication
Complexity theory
Spatiotemporal phenomena
Nonlinear dynamical systems
Numerical analysis
Adaptive mesh refinement
Approximation methods
Approximation error
Chebyshev approximation
Curve fitting
Extrapolation
Function approximation
Interpolation
Linear approximation
Mean square error methods
Perturbation methods
Convergence of numerical methods
Finite difference methods
Finite element analysis
Finite volume methods
Gradient methods
Independent component analysis
Iterative methods
Expectation-maximization algorithms
Iterative algorithms
Iterative closest point algorithm
Iterative methods
Iterative learning control
Least squares approximation
Least mean square methods
Method of moments
Mode matching methods
Multigrid methods
Newton method
Numerical simulation
Numerical stability
Relaxation methods
Sparse matrices
Splines (mathematics)
Surface fitting
Response surface methodology
Symmetric matrices
Transmission line matrix methods
Optimization
Cost function
Optimal scheduling
Optimization methods
Circuit optimization
Design optimization
Gradient methods
H infinity control
Mathematical programming
Optimized production technology
Pareto optimization
Quadratic programming
Simulated annealing
Trajectory optimization
Piecewise linear techniques
Piecewise linear approximation
Predator prey systems
Probability
Ant colony optimization
Bayes methods
Recursive estimation
Error probability
Forecasting

Demand forecasting
Economic forecasting
Forecast uncertainty
Technology forecasting
Memoryless systems
Pairwise error probability
Possibility theory
Probability distribution
Exponential distribution
Log-normal distribution
Maxwell-Boltzmann distribution
Nakagami distribution
Random variables
Statistical distributions
Distribution functions
Gaussian distribution
Weibull distribution
Uncertainty
Forecast uncertainty

Quaternions
Random processes
Brownian motion
Root mean square
Sequences
Binary sequences
Random sequences
Set theory
Fuzzy set theory
Fuzzy sets
Rough sets
Simulated annealing
Smoothing methods
Spirals
Statistics
Adaptive estimation
Autoregressive processes
Boltzmann distribution
Lattice Boltzmann methods
Correlation
Autocorrelation
Correlation coefficient
Covariance matrices
Gaussian mixture model
Higher order statistics
Histograms
Linear discriminant analysis
Maximum likelihood estimation
Mimimax techniques
Mixture models
Parametric statistics
Prediction theory
Ranking (statistics)
Root mean square
Sampling methods
Compressed sensing
Nonuniform sampling
Statistical analysis
Analysis of variance
Mode matching methods
Monte Carlo methods
Parameter estimation
Pareto analysis
Principal component analysis
Regression analysis
Time series analysis
Stochastic processes
Gaussian processes
Gaussian mixture model
Markov processes
Markov random fields
Taylor series
Topology
Transforms
Discrete transforms
Discrete cosine transforms
Empirical mode decomposition
Fourier transforms
Discrete Fourier transforms
Fast Fourier transforms
Fourier transform infrared
spectroscopy
Karhunen-Loeve transforms
Poincare invariance
Wavelet transforms
Biorthogonal modulation
Continuous wavelet transforms
Discrete wavelet transforms
Wavelet coefficients
Wavelet packets
Transmission line matrix methods
Uncertain systems
Utility theory

Microwave theory and techniques
Microwave technology
Beam steering
Circulators
Masers
Gyrotrons
Microwave bands
2015 IEEE Taxonomy

............C-band
............K-band
............L-band
........Microwave circuits
........Microwave communication
........Rectennas
........Microwave devices
........Masers
........Microwave amplifiers
........Microwave filters
........Microwave transistors
........Microwave generation
........High power microwave generation
........Microwave photonics
........Microwave sensors
........Millimeter wave technology
........Millimeter wave circuits
........Millimeter wave integrated circuits
........Millimeter wave communication
........Millimeter wave devices
........Millimeter wave transistors
........Millimeter wave integrated circuits
........MIMCs
........Millimeter wave radar
........Submillimeter wave technology
........Submillimeter wave circuits
........Submillimeter wave integrated circuits
........Submillimeter wave communication
........Submillimeter wave devices
........Submillimeter wave transistors
........Submillimeter wave integrated circuits

Nanotechnology
........Bionanotechnology
........Casimir effect
........Molecular electronics
........Nanobioscience
........DNA computing
........Nanobiotechnology
........Nanoelectromechanical systems
........Nanoelectronics
........Nanofabrication
........Nanofluidics
........Nanolithography
........Nanomaterials
........Nanopatterning
........Colloidal lithography
........Nanophotonics
........Nanopositioning
........Nanoscale devices
........Nanocontacts
........Nanotube devices
........Nanosensors
........Nanostructured materials
........Nanocomposites
........Nanoporous materials
........Nanostructures
........Nanoparticles
........Carbon nanotubes
........Semiconductor nanotubes
........Nanowires
........Semiconductor nanostructures
........Self-assembly
........Electrostatic self-assembly
........Self-replicating machines

Nuclear and plasma sciences
........Biomedical applications of radiation
........Colliding beam devices
........Colliding beam accelerators
........Muon colliders
........Electron emission
........Ballistic transport
........Electronic ballasts
........Elementary particles
........Charge carriers
........Charge carrier density
........Charge carrier lifetime
........Charge carrier mobility
........Charge carrier processes
........Hot carriers
........Electrons
........Electron sources
........Quantum wells
........Trions
........Elementary particle exchange interactions
........Elementary particle vacuum
........Ions
........Ion sources
........Ionization
........Mesons
........Neutrino sources
........Neutrons
........Particle beams
........Atomic beams
........Electron beams
Ion beams
Particle collisions
Phonons
Positrons
Protons
Fusion power generation
Fusion reactors
Fusion reactor design
Tokamaks
Tokamak devices
Gamma-rays
Gamma-ray bursts
Gamma-ray detection
Gamma-ray effects
Gas discharge devices
Glow discharge devices
High energy physics instrumentation
Linear particle accelerator
Ion beam applications
Ion implantation
Plasma immersion ion implantation
Ion emission
Nuclear electronics
Nuclear imaging
Energy resolution
Nuclear medicine
Nuclear physics
Alpha particles
Beta rays
Ignition
Ion sources
Isotopes
Nuclear phase transformations
Nuclear thermodynamics
Relativistic effects
Particle accelerators
Accelerator magnets
Colliding beam accelerators
Cyclotrons
Electron accelerators
Ion accelerators
Linear accelerators
Photon collider
Plasma accelerators
Proton accelerators
Storage rings
Synchrocyclotrons
Synchrotrons
Synchrotron radiation
Undulators

Particle beam handling
Particle beam injection
Plasmas
Atmospheric-pressure plasmas
Plasma applications
Plasma devices
Plasma immersion ion implantation
Plasma welding
Tokamaks
Plasma confinement
Inertial confinement
Magnetic confinement
Plasma diagnostics
Plasma properties
Dusty plasmas
Plasma chemistry
Plasma density
Plasma sheaths
Plasma stability
Plasma temperature
Plasmons
Plasma simulation
Plasma sources
Plasma transport processes
Plasma-assisted combustion
Radiation effects
Biological effects of radiation
Gamma-ray effects
Ion radiation effects
Neutron radiation effects
Space radiation
Terahertz radiation
Total ionizing dose
Radiation hardening (electronics)
Radiation monitoring
Radiation dosage
Radiation safety
Reactor instrumentation
Scintillation counters
Solid scintillation detectors
Thermionic emission

Oceanic engineering and marine technology
Marine navigation
Marine technology
Marine equipment
Marine transportation
Marine vehicles
Underwater cables
2015 IEEE Taxonomy

Power electronics

Power engineering and energy

Underwater communication
Underwater equipment
Rebreathing equipment
Underwater structures
Underwater technology
Underwater communication
Underwater equipment
Underwater structures
Ocean temperature
Oceanographic techniques
Water pollution
Marine pollution

Power electronics

Adiabatic
Converters
AC-AC converters
DC-AC power converters
Digital-to-frequency converters
Frequency conversion
Mixers
Optical frequency conversion
Power conversion
AC-AC converters
AC-DC power converters
DC-AC power converters
DC-DC power converters
Matrix converters
Power conversion harmonics
Pulse width modulation converters
Static power converters
Wavelength converters
Current limiters
Fault current limiters
Inverters
Pulse inverters
Resonant inverters
Phase control
Power conditioning
Power smoothing
Power semiconductor devices
Power transistors
Power semiconductor switches
Bipolar transistors
Insulated gate bipolar transistors
Kirk field collapse effect
Thyristors
Photothyristors
Snubbers
Three-phase electric power

Power engineering and energy

Electric variables control
Current control
Electric current control
Electrical ballasts
Gain control
Power control
Power system control
Bidirectional power flow
Load flow control
SCADA systems
Reactive power control
Voltage control
Automatic voltage control
Energy
Energy barrier
Energy capture
Energy consumption
Energy conversion
Atomic batteries
Batteries
Fuel cells
Motors
Photovoltaic cells
Potential well
Solar heating
Thermoelectricity
Waste heat
Energy dissipation
Energy exchange
Inductive charging
Energy harvesting
Energy management
Demand-side management
Energy conservation
Energy efficiency
Load management
Transactive energy
Energy resources
Fuels
Geothermal energy
Nuclear fuels
Solar energy
Wave power
Wind energy
Wind farms
Energy states
Effective mass
Orbital calculations
Energy storage
Batteries
...............Flywheels
...............Fuel cells
...............Hydrogen storage
...............Supercapacitors
...............Superconducting magnetic energy storage
...............Power engineering
...............Ferroresonance
...............High-voltage techniques
...............Power engineering computing
...............Power system simulation
...............Power generation
...............Automatic generation control
...............Cogeneration
...............Distributed power generation
...............Geothermal power generation
...............Hydroelectric power generation
...............Hydroelectric-thermal power generation
...............Microhydro power
...............Picohydro power
...............Magnetohydrodynamic power generation
...............Nuclear power generation
...............Atomic batteries
...............Fission reactors
...............Fusion power generation
...............Power generation control
...............Power generation dispatch
...............Power generation planning
...............Solar power generation
...............Maximum power point trackers
...............Photovoltaic systems
...............Solar panels
...............Trigeneration
...............Turbomachinery
...............Turbines
...............Turbogenerators
...............Wind energy generation
...............Wind energy integration
...............Wind power generation
...............Power systems
...............Hybrid power systems
...............Industrial power systems
...............Power distribution
...............Power distribution faults
...............Power distribution lines
...............Power grids
...............Microgrids
...............Smart grids
...............Power supplies
...............Battery chargers
...............Charging stations
...............Current supplies
...............Emergency power supplies
...............Inductive charging
...............Islanding
...............Power demand
...............Power quality
...............Power system restoration
...............Switched-mode power supply
...............Traction power supplies
...............Umbilical cable
...............Power system analysis computing
...............Power system dynamics
...............Power system economics
...............Power system faults
...............Power system harmonics
...............Power harmonic filters
...............Power system management
...............Load flow
...............Power system measurements
...............Meter reading
...............Power system planning
...............Power demand
...............Power system protection
...............Electrical safety
...............Substation protection
...............Surge protection
...............Power system reliability
...............Power system stability
...............Power transmission
...............Common Information Model (electricity)
...............Flexible AC transmission systems
...............HVDC transmission
...............Inductive power transmission
...............Static VAR compensators
...............Transmission lines
...............Wireless power transmission
...............PSCAD
...............Pulse power systems
...............Pulsed power supplies
...............Reactive power
...............Substations
...............Substation automation
...............Substation protection
...............Transformers
...............Current transformers
...............Flyback transformers
...............Instrument transformers
...............Phase transformers

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Power transformers
Pulse transformers
Uninterruptible power systems
Wind energy integration

Product safety engineering
Consumer protection
Power system protection
Electrical safety
Fault protection
Grounding
Substation protection
Surge protection
 Arresters
Safety
Aerospace safety
Air safety
Domestic safety
Emergency services
Explosion protection
Hazards
Biohazards
Chemical hazards
Explosions
Fires
Flammability
Floods
Hazardous areas
Hazardous materials
Toxicology
Health and safety
Occupational health
Occupational safety
Marine safety
Product safety
Protection
Explosion protection
Lightning protection
Radiation safety
Safety devices
Eye protection
Protective clothing
Safety management
Vehicle safety
Vehicle crash testing

Professional communication
Collaboration
Collaborative tools

Call conference
Collaborative software
Videoconferences
Discussion forums
Teamwork
Virtual groups
Communication aids
Communication effectiveness
Communication symbols
Semiotics
Pragmatics
Semantics
Syntactics
Context
Databases
Database systems
Audio databases
Deductive databases
Image databases
Indexes
Multimedia databases
Object oriented databases
Query processing
Deductive databases
Distributed databases
Image databases
Image retrieval
Multimedia databases
Object oriented databases
Relational databases
Spatial databases
Transaction databases
Itemsets
Visual databases
Global communication
Cross-cultural communication
Geographic information systems
Geospatial analysis
Gunshot detection systems
Grammar
Information analysis
Decision analysis
Indexing
Information resources
Information retrieval
Blogs
Content-based retrieval
Hypertext systems
Information filtering
Information filters
Recommender systems
Information rates
Music information retrieval
Online services
Online banking
Search engines
Search methods
Keyword search
Metasearch
Nearest neighbor searches
Search problems
Web search
Social network services
Computer mediated communication
Facebook
Flickr
LinkedIn
MySpace
Second Life
Twitter
YouTube
Tagging
Tag clouds
Taxonomy
Terminology
Dictionaries
Video sharing
Facebook
MySpace
YouTube
Vocabulary
Web sites
Facebook
MySpace
Uniform resource locators
Web design
YouTube
Information science
Information services
Ask IEEE
Dictionaries
Document delivery
Ask IEEE
Encyclopedias
Libraries
Software libraries
Teletext
Videotex
Wikipedia
Information systems
Data systems
Data acquisition
Data compression
Data conversion
Data engineering
Data handling
Data processing
Data storage systems
Data warehouses
Database systems
Audio databases
Deductive databases
Image databases
Indexes
Multimedia databases
Object oriented databases
Query processing
Distributed information systems
Distributed management
Publish-subscribe
Identity management systems
Informatics
Biomedical informatics
Cognitive informatics
Information architecture
Information management
Common Information Model (computing)
Competitive intelligence
Digital preservation
Document handling
Information security
Information sharing
Knowledge transfer
Information processing
Informatics
Information exchange
Sonification
Management information systems
Portals
Medical information systems
Electronic medical records
Information technology
Bring your own device
Information and communication technology
Ambient assisted living
Information representation
Printing
Digital printing
Teleprinting
Three-dimensional printing
Semantic technology
2015 IEEE Taxonomy

Reliability

Availability

Fault diagnosis

Dissolved gas analysis

Fault location

Fault tolerance

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

Resonance

Ferroresonance

Magnetic resonance

Nuclear magnetic resonance

Paramagnetic resonance

Resonance light scattering

Stochastic resonance

Robotics and automation

Animatronics

Automation

Automated highways

Automatic generation control

Automatic testing

Automatic test pattern generation

Ring generators

Building automation

Manufacturing automation

Computer aided manufacturing

Computer integrated manufacturing

Computer numerical control

Flexible manufacturing systems

Office automation

Workflow management software

Storage automation

Vehicular automation

Multi-robot systems

Robots

Androids

Aquatic robots

Automata

Turing machines

Cognitive robotics

Computer vision

Active appearance model

Face detection

Smart cameras

Educational robots

Humanoid robots

Intelligent robots

Manipulators

End effectors

Manipulator dynamics

Micromanipulators

Medical robotics

Rehabilitation robotics
Mobile robots
Autonomous automobiles
Climbing robots
Legged locomotion
Swimming robots
Orbital robotics
Parallel robots
Rescue robots
Robot control
Robot motion
Robot kinematics
Motion analysis
Robot programming
Robot sensing systems
Robot vision systems
Simultaneous localization and mapping
Tactile sensors
Service robots
Telerobotics
Teleoperators

Science - general
Astronomy
Astrophysics
Observatories
Orbits (stellar)
Planets
Earth
Extrasolar planets
Jupiter
Mars
Mercury (planets)
Pluto
Saturn
Sun
Venus
Radio astronomy
Solar system
Kuiper belt
Stellar dynamics
Stellar motion
Biology
Biochemistry
Amino acids
Biochemical analysis
Peptides
Proteins
Biodiversity
Biogeography

Bioelectric phenomena
Electric shock
Biological cells
Cells (biology)
Chromosome mapping
Fibroblasts
RNA
Stem cells
Biological information theory
Biological processes
Biological interactions
Chronobiology
Circadian rhythm
Coagulation
Symbiosis
Biological system modeling
Biological systems
Anatomy
Molecular communication
Organisms
Biology computing
Biophotonics
Biophysics
Aerospace biophysics
Biomagnetics
Cellular biophysics
Molecular biophysics
Cryobiology
Evolution (biology)
Memetics
Phylogeny
Genetics
DNA
Gene therapy
Genetic communication
Genetic expression
Genetic programming
Genomics
Microinjection
Nanobioscience
DNA computing
Nanobiotechnology
Physiology
Predator prey systems
Synthetic biology
Systematics
Systems biology
Vegetation
Crops
Marine vegetation
Zoology
Animals

Chemistry

Astrochemistry

Biochemistry

Amino acids

Biochemical analysis

Peptides

Proteins

Chemical analysis

Activation analysis

Chemical processes

Chemicals

Electronic noses

pH measurement

Chemical compounds

Anti-freeze

Bromine compounds

Ethanol

Methanol

Geochemistry

Inorganic chemicals

Interstellar chemistry

Organic chemicals

Hydrocarbons

Photochemistry

Photobleaching

Electricity

Photoelectricity

Photovoltaic effects

Piezoelectricity

Piezoelectric effect

Piezoelectric polarization

Pyroelectricity

Thermoelectricity

Electrothermal effects

Thermoelectric devices

Triboelectricity

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

Earthquake engineering

Forestry

Geochemistry

Geotextiles

Geography

Rural areas

Urban areas

Geology

Minerals

Rocks

Geophysics

EMTDC

Extraterrestrial phenomena

Geodynamics

Geophysics computing

Meteorology

Moisture

Seismology

Surface waves

Well logging

Ice

Ice shelf

Ice surface

Ice thickness

Sea ice

Lakes

Land surface

Levee

Meteorological factors

Oceanography

Oceans

Ocean salinity

Ocean temperature

Sea coast

Sea floor

Sea level

Sea surface

Tides

Rivers

Sediments

Soil

Soil moisture

Soil properties
...........Teleportation
...........Tunneling
........Solid-state physics
........String theory
........Thermal factors
........Temperature
........Temperature dependence
........Thermal conductivity
........Thermal expansion
........Thermal management
........Thermal stresses
........Thermoelasticity
........Thermoelectricity
........Thermolysis
........Thermooptic effects
........Thermoresistivity

....Waves
....Atmospheric waves
....Berry phase
....Doppler effect
....Electrodynamics
....Magnetostatic waves
....Matter waves
....Plasma waves
....Propagation
....Reflectivity
....Seismic waves
....Shock waves
....Solitons
....Surface acoustic waves
....Wave functions
....Sociology
....Digital divide
....Social groups
....Millennials
....Senior citizens
....Social intelligence
....Thermodynamics
....Enthalpy
....Isobaric
....Isothermal processes

Sensors
....Acoustic sensors
....Chemical and biological sensors
....Biosensors
....Gas detectors
....Amperometric sensors
....Electromechanical sensors
....Memsensors
....Force sensors
....Infrared sensors
....Intelligent sensors
....Intracranial pressure sensors
....Ionizing radiation sensors
....Position sensitive particle detectors
....Radiation 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
....Sensor phenomena and characterization
....Sensor systems and applications
....Detectors
....Envelope detectors
....Semiconductor detectors
....Electric sensing devices
....Leak detection
....Radiofrequency identification
....RFID tags
....Robot sensing systems
....Robot vision systems
....Simultaneous localization and mapping
....Tactile sensors
....Sensor arrays
....Sensor fusion
....Sensor systems
....Gunshot detection systems
....Thermal sensors
....Temperature sensors
....Thick film sensors
....Thin film sensors
....Wearable sensors

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Signal processing

- Acoustic signal processing
- Active noise reduction
- Echo cancellers
- Speech processing
- Human voice
- Speech enhancement
- Speech synthesis
- Adaptive signal processing
- Adaptive filters
- Adaptive signal detection
- Amplifiers
- Broadband amplifiers
- Cavity resonators
- Laser cavity resonators
- Differential amplifiers
- Distributed amplifiers
- Low-noise amplifiers
- Operational amplifiers
- Feedback amplifiers
- Power amplifiers
- High power amplifiers
- Predistortion
- Preamplifiers
- Pulse amplifiers
- Radiofrequency amplifiers
- 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
...Digital filters
...Finite impulse response filters
...Equalizers
...Adaptive equalizers
...Blind equalizers
...Decision feedback equalizers
...Filtering theory
...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
...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
2015 IEEE Taxonomy

- Modulation coding
  - Interleaved codes
- Optical modulation
- Electrooptic modulators
- Intensity modulation
- Phase modulation
  - Continuous 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
- 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
- Magnetic recording
  - Digital magnetic recording
  - Heat-assisted magnetic recording
- Magnetic noise
- Magnetooptic recording
- Microwave-assisted magnetic recording
  - Perpendicular 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 detector
  - Radar detection
  - Signal generators
  - Noise generators
  - Pulse generation
  - Optical pulse generation
  - Signal reconstruction
  - Signal denoising
  - Signal resolution
  - Diversity reception
  - Signal restoration
Solid state circuits
....Circuit subsystems
....Circuit theory
....FET circuits
........FET integrated circuits
........Field effect MMIC
........MESFET integrated circuits
........JFET circuits
........JFET integrated circuits
........MESFET circuits
........MESFET integrated circuits
........MODFET circuits
........MODFET integrated circuits
........MOSFET circuits
........CMOSFET circuits
........MOS integrated circuits
........Power MOSFET
....Gate leakage
....Solid state circuit design
....Transistors
........Field effect transistors
........CNTFETs
........Double-gate FETs
........HEMTs
........JFETs
........MESFETs
........MISFETs
........MODFETs
........MOSFET
........MOSHFTs
........OFETs
........Schottky gate field effect transistors
........TFETs
........Thin film transistors
........Heterojunction bipolar transistors
........Double heterojunction bipolar transistors
........Millimeter wave transistors
........Phototransistors

Superconductivity
....Bean model
....Critical current density
........Critical current density
........(superconductivity)
........Flux pinning
........Superconducting devices
........Josephson junctions
........SQUIDs
........Superconducting coils

Social implications of technology
....Cultural differences
....Environmental factors
........Biosphere
........Ecology
........Ecosystems
........Wetlands
........Environmental economics
........Carbon tax
........Environmental monitoring
........Global warming
........Green products
........Green buildings
........Green cleaning
....Pollution
........Air pollution
........Industrial pollution
........Land pollution
........Oil pollution
........Radioactive pollution
........Thermal pollution
........Urban pollution
........Water pollution
...Ethical aspects
...Ethics
...Globalization
...International relations
...Peace technology
...Philosophical considerations
...Social factors
...Demography
...Technology social factors
...Privacy
...Sustainable development
...Technology
...Appropriate technology
...Technological innovation
...Technology social factors
...Privacy
...Technology transfer
...Small business technology transfer
Superconducting magnets
Superconducting microwave devices
Superconducting photodetectors
Superconducting filaments and wires
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
Type II superconductors
Superconducting transition temperature

Systems engineering and theory
Adaptive systems
Adaptive control
Cognitive radar
Line enhancers
Multi-agent systems
Variable structure systems
Capability engineering
Complex systems
Configuration management
Hierarchical systems
Multilevel systems
Integrated design
Interface management
Modeling
Analytical models
Atmospheric modeling
Brain modeling
Computational modeling
Agent-based modeling
Computational cultural modeling
Context modeling
Data models
Metadata
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
Metamodeling
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
Medical simulation
Systems simulation
Solid modeling
System identification
Systems modeling
Multidimensional 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
Control system analysis
State-space methods
Diakoptics
Distributed processing
Message passing
Distributed vision networks
Fault detection
Fault tolerant systems
Interconnected systems
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
Sequential diagnosis
Software prototyping
System dynamics
System performance
Cooperative caching
System-level design
Systems modeling
Systems Modeling Language
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
System realization
System validation
System testing
Model checking
System verification
System testing
Model checking
Systems architecture
Systems engineering education
Systems operation
Systems simulation
Systems support
Systems thinking
Technical management
Maintenance management
Technical planning

Biomarkers
Molecular biomarkers
Computational linguistics
Sentiment analysis
Cybernetics
Adaptive systems
Adaptive control
Cognitive radar
Line enhancers
Multi-agent systems
Variable structure systems
Cognitive informatics
Cognitive science
Problem-solving
Control theory
Control nonlinearities
Iterative learning control
Observability
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
Human factors
Affective computing
Anthropomorphism
Identification of persons
Biometrics (access control)
Face recognition
Fingerprint recognition
Gait recognition
Iris recognition
Face recognition
Fingerprint recognition
Handwriting recognition
Forgery
Speaker recognition
Speech recognition
Automatic speech recognition
Speech analysis
Man-machine systems

Systems, man, and cybernetics
Behavioral sciences
Animal behavior
Cognition
Consumer behavior
Psychiatry
Mental disorders
Psychology
Industrial psychology
Mood
Psychometric testing
Social intelligence
Biological control systems

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Interactive systems
Natural languages
Natural language processing
........Morphology
........Sentiment analysis
Pervasive computing
Ubiquitous computing
........Context-aware services
Wearable computers
Posthuman
Teleworking
Transhuman
User interfaces
........Audio user interfaces
........Brain-computer interfaces
Data visualization
........Isosurfaces
Emotion recognition
Exoskeletons
........Graphical user interfaces
........Avatars
........Human computer interaction
........Gaze tracking
........Human-robot interaction
........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
........Ultrasoundography
........Sonogram
........Ultrasonic transducers

Vehicular and wireless technologies
........Automotive engineering
........Automotive applications
........Automotive electronics
........Power steering
........Vehicle crash testing
........Vehicle detection
........Vehicle driving
........Vehicle dynamics
........Vehicle safety
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
........Aircraft propulsion
........Propellers
........Electromagnetic launching
........Coilguns
........Railguns
........Electrothermal launching
........Rockets
........Vehicles
........Land vehicles
........Bicycles
........Electric vehicles
........Road vehicles
........Military vehicles
........Remotely operated vehicles
........Unmanned aerial vehicles
........Space vehicles
........Space shuttles
........Wireless sensor networks
........Body sensor networks
........Event detection