EE Faculty Members and their Research Areas  2015-2016

Adler, Robert – Prof.
   Email: robert@ee.technion.ac.il
   Stochastic processes, random fields, Gaussian processes, stochastic geometry and topology, theory and applications of all these.

Alexandrovitz, Abraham – Prof. Emeritus
   Email: abe@ee.technion.ac.il
   Electrical Drives, Power Systems, Electrical Machines Dynamics.

Atar, Rami – Prof.
   Email: atar@ee.technion.ac.il
   Theoretical and applied probability. Specifically: asymptotic analysis of queueing models, the diffusion and the large deviation regimes, PDE techniques in control and games, filtering and estimation.

Bahir, Gad – Prof. Emeritus
   Email: bahir@ee.technion.ac.il
   Advanced nanostructures (quantum dots and quantum wells) based devices.

Bar-David, Israel – Prof. Emeritus
   Email: bardavid @ee.technion.ac.il
   Statistical Theory of Communication, Detection, Estimation.

Bartal, Guy – Assis. Prof.
   Email: guy@ee.technion.ac.il
   Nanophotonics, Plasmonics & Metamaterials, Nonlinear optics.

Birk, Yitzhak (Tsahi) – Assoc. Prof.
   Email: birk @ee.technion.ac.il
   Computer systems and subsystems (storage and communication in particular); information and multimedia systems architecture; parallel systems for the above; topics related to multi-core processors.

Buks, Eyal – Assoc. Prof.
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   Superconducting and nanomechanical devices

Cassuto Yuval- Assis. Prof
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Cidon, Israel – Prof. (On Sabbatical)
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   Networks on chip (NoC), chip multi-processors (CMP), mobile wireless networks, Internet overlay networks.
Cohen, Emanuel – Assis. Prof
Email: emcohen@ee.technion.ac.il
High speed and high frequency integrated circuits for Communication Sensing and Imaging.
Specifically RFIC and mm-Wave circuits and phased array applications in advanced CMOS process.
Algorithmic and high speed mixed signal, high speed circuits & methods for power efficiency boosting of transmitters.
Digital RF design and digital assisted systems including calibrations and BIST for wireless mobile platforms in CMOS.

Cohen, Israel – Prof.
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Digital processing of speech, image and seismic signals; Microphone arrays; Detection and estimation; Source localization; Blind source separation; System identification; Adaptive filtering.

Crammer, Jacob (Koby) – Assoc. Prof.
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Machine Learning, Big Data Analysis, Statistical Inference, Online Decision Making, Structured Problems; Written and Spoken Natural Language Processing; Information Extraction.

Einziger, Pinchas – Assoc. Prof.
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Electromagnetic Theory, Wave Propagation.

Eisenstein, Gadi – Prof.
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Eldar, Yonina – Prof.
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Sub-Nyquist sampling, compressed sensing, estimation theory and detection methods, sampling theory, communications, optimization.

Etsion, Yoav – Assis. Prof
Email: yetsion@tte.technion.ac.il
Computer architecture and micro-architecture, parallel and multi-core processors, hardware/software interaction, operating systems and virtualization, parallel programming models, memory systems, dataflow computing, non-von-Neumann computing, computer systems security.

Feuer, Arie – Prof. Emeritus
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Digital image and video processing, sampling, representation and reconstruction of signals, both one dimensional and multi dimensional.

Finkman, Eliezer – Prof. Emeritus
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Optical and transport properties of compound semiconductors: Quantum well heterostructures and superlattices; Hg$_{1\rightarrow}$Cd$_x$Te narrow band-gap semiconductors; Semiconductor detectors.
Fischer, Baruch – Prof.
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Fiber optics and fiber optic communications; Non linear and photorefractive optics; Physical, quantum and statistical-mechanics concepts in optics of light, lasers and electro-optic materials.

Gilboa, Guy – Assis. Prof.
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Image processing and computer vision, local and non-local variational methods, partial differential equations based processing techniques; Depth and 3D cameras; Medical imaging.

Ginosar, Ran – Prof.
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VLSI architectures. Asynchronous VLSI. Many-core computer architecture. Low power and high speed VLSI systems and circuits.

Hayat, Alex – Assis. Prof.
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Quantum devices and technologies, nanoelectronics, low-power ultrafast switches and circuits – based on novel states of matter; Hybrid high-temperature superconductor-semiconductor devices, including optoelectronics; Topological insulator devices, including: spintronics, quantum circuits and THz electronics; Semiconductor exciton–polariton condensate devices and circuits.

Horowitz, Moshe – Prof.
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Nonlinear optics, Ultrafast optical sources, Periodic optical structures, Solitons, Inverse scattering theory, Electro-optic systems, Optical switching.

Inbar, Gideon F. – Prof. Emeritus
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Biological Signal Analysis and Bio-Cybernetics with an Emphasis on the Human Motor Control System.

Katzenelson, Jacob – Prof. Emeritus
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Computer Systems, Very High Level Computer Languages, Computer Aided Design of VLSI.

Keidar, Idit – Prof.
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Fault-tolerant distributed algorithms and systems; Foundations of replication, agreement, and their performance; Local computations in large scale networks; Chip-Multiprocessors (CMPs) and their memory architectures; Distributed applications in mobile networks, e.g., wireless mesh networks (WMNs); DDoS-resistance and fault-tolerance.

Keslassy, Isaac – Assoc. Prof.
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Computer networks; Routers; Networks-on-chip; Network algorithms: switching; buffering; hashing; scheduling; forwarding; classification; and congestion control.
Kolodny, Avinoam – Assoc. Prof.
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System and circuit interconnect; Network on chip; methodologies and tools for electronic design automation; VLSI architecture and circuit design.

Kvatinsky Shahar – Assis prof.
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Architecture and design of VLSI circuits, Computer memory, architectures of accelerators, VLSI Computer Aided Design, Analog circuits, CPU architecture and microarchitecture, Emerging computing and memory technologies.

Leviatan, Yehuda – Prof.
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Levron Yoash - Assis. Prof.
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Power Systems & Networks: advanced energy conversion systems, methods for signal processing, control, sensing and estimation in power networks. Smart grid research.
Renewable Energy Sources: advanced energy conversion devices for fuel cells, wind energy, and solar energy. Integration of renewable energy sources in modern power systems.
Power Electronics: power converters for integrated circuits, bio-medical devices, security systems and renewable energy systems.
Magnetics: Transmission of energy and information over magnetic mediums. "Substance penetrating" magnetic communications.

Malah, David – Prof. Emeritus
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Mannor, Shie –Prof.
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Machine learning; reinforcement learning; analysis and control of complex systems; decision, optimization and control under uncertainty; multi-agent systems and game theory; control and management of smart grids; applications of machine learning in networks, medicine and information technology.

Marom Shimon – Prof.
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Electrical excitability in point and extended biological systems, Neural Networks: dynamics and function.

Meir, Ron –Prof. (on Sabbatical)
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Information processing, control and dynamics in neural systems ;Reinforcement learning in natural and artificial systems ;Reverse engineering biological systems.
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Information Theory and Statistical Communication.

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Nazarathy, Moshe - Prof.
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Faster lower-cost, energy efficient transmission of information over fiber-optic Links
Internet-of-Things - distributed E-M Sensors Magneto-inductive sensing and Communication Detail (if needed) Cost effective home 1 ...10 Gb/s modems Lowest-cost, highest capacity, most energy efficient (inter-)data centers photonic interconnects Increasing capacity of the Internet Backbone by orders of magnitude – widening the “pipes of information” underlying www.
At the junction between Optical Physics, Communication Theory Digital Signal Processing and Electro-Magnetics

Nemirovsky, Yael – Prof. Emeritus
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Microelectronics, Electro-optics, Microsystems, MEMS, Sensors.

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Computer communication networks, quality of service (QoS) and survivability, routing, applications of Game Theory to communication networks, wireless networks, pricing in the Internet, distributed and on-line network algorithms.

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Nano-photonics, Nano-plasmonics, Linear and nonlinear semiconductor optoelectronics, optical antennas, miniature novel light sources, quantum optics, metamaterials

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Vision in Man and Machine, Multidimensional Signal Representation and Processing, Medical Imaging

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Electron devices based upon compound semiconductors, memristors, semiconductor nanowires, metal organic molecular beam epitaxy.
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optoacoustic imaging systems, ultra-sensitive detection of ultrasound, interferometric systems, minimally invasive imaging procedures, tomographic inverse problems.

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Electrodynamics, Advanced acceleration concepts, Interaction of EM fields and the human body, Solar energy.

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Control of stochastic systems, Reinforcement Learning, queueing systems, game theoretic analysis of multi-user systems, distributed estimation and target tracking, flight trajectory optimization.

Shwartz, Adam – Prof. (on Sabbatical)
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Mathematical models of computer networks.
Mathematical methods for analysing and optimising such networks.
Analysis of rare (catastrophic) events in networks.

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Computer systems, Operating systems for GPUs and computational accelerators, High performance computing, Distributed storage systems, Systems security.

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Information Theory, Communications, Multi-user communication systems.

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Computer graphics; computer vision, multimedia; scientific visualization.

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Coding theory in general, polar codes, multidimensional constraints, list decoding.

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Conducting, semi-conducting and light emitting organic materials. This includes photo-physical processes (including laser action and micro-cavities), transport of charges and of electron-hole pairs (excitons), processing of devices and circuits (diodes, transistors, detectors). Also, the combination between synthetic and natural (biological) polymers as a tool to extend the understanding and scope of each separate system.

Weiser, Uri – Prof. Emeritus
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VLSI Computer Architecture, Memory Sub-system, Heterogeneous systems, Memory intensive architecture, Accelerators.

Yaish, Yuval – Assis. Prof.  
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Electrical, mechanical, and optical properties of carbon nanotubes and graphene. Dissipation processes at the nano scale. Ultra sensitive detectors.

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Zelnik-Manor, Lihi – Assoc. Prof. (on Sabbatical)  
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Ziv, Jacob – Distinguished Prof. Emeritus  
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Information Theory, Statistical Theory of Communication.
**Distinguished Visiting Professors**

**Viterbi, Andrew** – Distinguished Prof.
Statistical Communication, Information Theory, Spread Spectrum.

**Sir Friend, Richard** - Distinguished Prof.
Conjugated Polymers; Time-resolved optical spectroscopy; Molecular conductors and magnets.

**Yablounovitch Eli** - Prof.

**Visiting Professors**

**Bruck, Jehoshua**- Prof.
Design of distributed information systems and the theoretical study of biological circuits and systems.

**Fainman Yeshiahu** – Prof.

**Friedman, Eby** – Prof.
VLSI

**Makovski Armand**- Prof.

**Mendelson, Avi** – Prof.
Email: avi.mendelson@tce.technion.ac.il
Technion Computer Engineering Center (TCE)
Computer architecture, HPC, GPGPU, OS, Fault-tolerant systems, Real-Time Systems and Heterogeneous systems

**Weissman, Tsachy** – Assoc. Prof. (On leave)
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Information theory and its applications; Statistical signal processing.

**Wimer, Shmuel** - Assoc. Prof.
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VLSI circuits and systems
VLSI design optimization
Combinatorial optimization

**Zeevi assaf** - Prof.

**Visiting scientists**

**Berger Israel**

**Medan Yoav**

**Zadok Menashe Daniel**