Ben-Gurion University of the Negev

Faculty of Engineering Science
Electrical and Computer Engineering School

Projects Conference – 2022

The Electrical and Computer Engineering School
Is proud of its graduate's achievements, and is honored to invite you to the 45th annual Projects Conference

The event will take place on Thursday, June 30th 2022.

Presentation Time	Project Number	Student Name	Project Title	Mentors
Session 1: Deep Learning - Optical Sensing & Imaging ***Chairman:***				
09:00-09:20	p-2022-049	Tomer Klinger Shani Berkovitz	Deep Learning classifiers for data captured with optically encoded camera	Prof. Adrian Stern Mr. Vladislav Kravets
09:20-09:40	p-2022-085	Adi Reich Moshe Shindelhaim	Detection of events in 3D with stereoscopic Dynamic Vision System and deep learning	Prof. Adrian Stern
09:40-10:00	p-2022-096	Ofir Sogavker Yuval Shaanan	Space-time process of event clouds captured with a Dynamic Vision System (DVS) to detect human gestures	Prof. Adrian Stern
10:00-10:20	p-2022-107	Ohad Afriat Lior Cohen	Deep Learning processing for photon starved imaging	Prof. Adrian Stern Mr. Vladislav Kravets
10:20-10:35	p-2022-133	Ido Okashi	Deep Learning Super-Resolution of infra-red images	Prof. Adrian Stern Mr. Vladislav Kravets
10:35-10:50	p-2022-134	Raz Yosef	Adversarial attacks on Deep Learning segmentation algorithms and possible defenses	Prof. Adrian Stern
Session 2: Semiconductor & Organic Sensing ***Chairman:***				
12:00-12:15	p-2022-005	Almog Stern	Calculation of advanced silicon field-effect biosensor	Dr. Gil Shalev
12:15-12:35	p-2022-011	Liel Cohen Ben Gilad	Calculation of GaN field-effect biosensor	Dr. Gil Shalev
12:35-12:55	p-2022-080	Lior Magen Sapir Gamari	pH sensing with field effect transistors	Dr. Gil Shalev
12:55-13:15	p-2022-081	Matan Zini Nadav Sharaby	Sensing in solution environment using transistor-based devices	Dr. Gil Shalev
13:15-13:30	p-2022-131	Tomer Shick	modeling light trapping in arrays of subwavelength non-imaging light concentrators	Dr. Gil Shalev
13:30-13:50	p-2022-084	Ben Shahak Omri Nidam	Highly efficient organic solar cells	Prof. Rafi Shikler

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Session 3: Biomedical Optics / Multi-Spectral Filter / Spectroscopic / Digital Optics ***Chairman:***				
09:00-09:20	p-2022-105	Noor Masarwi Salem Abbas	Non-invasive blood glucose measurement using multispectral photoplethysmography	Prof. Ibrahim Abdulhalim
09:20-09:40	p-2022-120	Eshel Berkowitz Dmitri Bogodist	Integration of spectral-polarimetric camera and its applications development	Prof. Ibrahim Abdulhalim Dr. Marwan Abu leil
09:40-09:55	p-2022-123	Ameen Manasra	Compact spectroscopic ellipsometer-polarimeter and applications	Prof. Ibrahim Abdulhalim Dr. Marwan Abu leil
09:55-10:15	p-2022-048	Eylon Kapel Raam Kavod	Computerized drive for permanent magnets in a spectroscopic setup	Dr. Ilan Shalish
10:15-10:35	p-2022-074	Gal Tocker Hadar Mendelovich	Single camera shot self-reference on-axis quantitative phase imaging	Prof. Joseph Rosen Mr. Nathaniel Hai
10:35-10:55	p-2022-114	Yuval Yaakobovicg Gal Cohen	Calibration and inspection of spatial light modulator	Prof. Joseph Rosen Mr. Nathaniel Hai
Session 4: Optical Cancer Scan / Satellite Communication ***Chairman:***				
12:00-12:20	p-2022-003	Sean Weisselberg Lidor Kofman	Cancer scan - image processing deep learning II	Prof. Shlomi Arnon
12:20-12:40	p-2022-004	Roei Matz Yotam Silverman	Cancer scan - deep learning &image processing	Prof. Shlomi Arnon
12:40-12:55	p-2022-006	Barak Barzilay	Cancer scan - Experimental and theoretical study	Prof. Shlomi Arnon
12:55-13:15	p-2022-020	Ruben Fratty Yuval Saar	cyber security for next generation LEO satellite network	Prof. Shlomi Arnon
13:15-13:30	p-2022-021	Yuval Dahan	Cancer scan - Theoretical study	Prof. Shlomi Arnon
13:30-13:50	p-2022-088	Or Danieli Shir Haroush	Cancer scan - deep learning &image processing II	Prof. Shlomi Arnon
13:50-14:05	p-2022-091	Peleg Goldberger Uriel Almassy	Deep learning and cyber methods in LEO satellite network	Prof. Shlomi Arnon
14:05-14:20	p-2022-115	Matan Zazrin	Deciphering an angiographic photograph of the coronary arteries by deep learning	Prof. Shlomi Arnon Mr. Edward Koifman

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Session 5: *Applied Control & Energy Conversion* **Chairman:**				
09:00-09:20	p-2022-008	Yaniv Lerner Moran Faizenberg	Dynamic response enhancement of grid-connected converters	Prof. Alon Kuperman Mr. Pavel Strajnikov
09:20-09:40	p-2022-013	Yuval Yeruham Ron Yosef	Controlled electric drive subsystem for mobile robotic platform	Prof. Alon Kuperman
09:40-10:00	p-2022-050	Shahar Cohen Itamar Zadok	Electric drivetrain for G1 racing vehicle	Prof. Alon Kuperman
10:00-10:20	p-2022-059	Sapir Ashkenazi Shirin Salimov	Microcontroller based realization of cyber-attack on photovoltaic generation system	Prof. Alon Kuperman Mrs. Moria Sassonker Elkayam
10:20-10:40	p-2022-064	Maor Sherf Yarden Siton	Hardware development for three-phase grid-connected inverter	Prof. Alon Kuperman
10:40-11:00	p-2022-065	Alon Shnabel Segev Golan	Off-the-shelf PFC rectifiers optimization by performance-oriented voltage controllers redesign	Prof. Alon Kuperman Mr. Pavel Strajnikov
Session 6: Applied Control & Energy Conversion ***Chairman:***				
12:00-12:20	p-2022-067	Kfir Cohen Nimrod Stein	Design and programming of G1 racing vehicle CPU	Prof. Alon Kuperman
12:20-12:40	p-2022-068	Daniel Keren Gil Bleichman	Microprocessor-based control of three-phase grid-connected inverter	Prof. Alon Kuperman Mrs. Moria Sassonker Elkayam
12:40-13:00	p-2022-075	Gal Raz Guy Dahan	DSP-based control of G1 racing vehicle wireless charging	Prof. Alon Kuperman Mr. Andrey Vulfovich
13:00-13:20	p-2022-103	Mati Uliel Yaron Rapoport	Design and programming of battery controller for G1 racing vehicle	Prof. Alon Kuperman
13:20-13:35	p-2022-122	Majd Fadaos	Battery unit hardware design for G1 racing vehicle	Prof. Alon Kuperman
13:35-13:50	p-2022-128	Elad Kadosh	Contactless energy harvesting from current conducting wire	Prof. Alon Kuperman Mr. Andrey Vulfovich

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Session 7: Fiber Optics Telecommunications / On Chip Photonics ***Chairman:***				
09:00-09:20	p-2022-032	Lidor Frenkel Shmuel Kaltian	Equalization of the nonlinear fiber optical channel by deep learning	Prof. Stanislav Derevyanko
09:20-09:40	p-2022-038	Elad Aviran Matan Fink	Simulating nonlinear optical channels by generative adversarial networks	Prof. Stanislav Derevyanko
09:40-09:55	p-2022-086	Matan Aviv	Nonlinear Fraunhoffer diffraction of non-coherent optical beams	Prof. Stanislav Derevyanko
09:55-10:15	p-2022-089	Darya Asis Moshe Bunker	Focusing light through disordered multimode fibers by means of wavefront optimization	Prof. Stanislav Derevyanko
10:15-10:35	p-2022-092	Inbar Silberman May Ohayon	Study of hot spots in disordered multimode optical fibers	Prof. Stanislav Derevyanko
10:35-10:55	p-2022-118	Lior Salmona Mohamad Hamdan	Digitalization of Energy	Dr. Alina Karabchevsky
Session 8: Power Electronics ***Chairman:***				
12:00-12:20	p-2022-040	Bar Moskovich Noam Galili	Multi source docking station	Prof. Mor Peretz
12:20-12:40	p-2022-041	Barel Levi Shahaf Adiel	CoilGun electromagnetic propulsion system	Prof. Mor Peretz
12:40-13:00	p-2022-042	Bar Yosef Yuval Nissani	Electronic nerve muscle stimulation for medical applications	Prof. Mor Peretz
13:00-13:20	p-2022-043	Daniel Beniaminson Naor Amsalem	High conversion ratio regulation with multiple degrees of freedom	Prof. Mor Peretz
13:20-13:40	p-2022-044	Yakir Peretz Yehuda Roi Topaz	Digital front-end design of variable frequency control	Prof. Mor Peretz
13:40-14:00	p-2022-045	Or Dahan Roni Stopel	Advanced multi-level switching sequence for multiple objectives	Prof. Mor Peretz
14:00-14:15	p-2022-051	Ron Atzmon	Wireless power transfer with multiaxis freedom of positioning	Prof. Mor Peretz

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Session 9: Industry: Elta Systems Ltd / Power & Energy systems **Chairman:**				
09:00-09:20	p-2022-130	Ben Cohen Tamir Bracha	Detection of radar targets based on machine learning ELTA Systems Ltd	Prof. Ron Dabora Mr. Ido Finkelman
09:20-09:35	p-2022-129	Yotam Kovalski	Tunable Band Pass Filter ELTA Systems Ltd	Prof. Alon Kuperman Mr. Rafi Popovich
09:35-09:50	p-2022-126	Ori Bienner	ממיר מתח DC-DC 2.5 ממותג בתדר MHz מבוסס טכנולוגית GaN ELTA Systems Ltd	Prof. Mor Peretz Mr. Rafi Popovich
09:50-10:05	p-2022-127	Yair Dashevsky	Design & development of wide-band, high-power linear power-amplifier ELTA Systems Ltd	Prof. Mor Peretz Mr. Yaniv Dror
10:05-10:25	p-2022-028	Munay Majeed Hani Morad	Design and construction of a controlled inductor	Prof. Shmuel Ben-yaakov
10:25-10:45	p-2022-031	Yousef Atalla	Controlled inductor based resonant LLC converter	Prof. Shmuel Ben-yaakov
10:45-11:05	p-2022-101	Ohad Reuveni Ron Neter	Electric power train for a racing car	Prof. Shmuel Ben-yaakov
Session 10: Robotics & Control Systems **Chairman:**				
12:00-12:20	p-2022-002	Dan Gridish Ophir Gruteke	Unmanned Surface Vehicle for Searching and Survey of shallow water bodies	Prof. Hugo Guterman
12:20-12:40	p-2022-026	Amir Asher Katrin Nekhin	Internet Screen Reader	Prof. Hugo Guterman Dr. Ariel Luzzatto
12:40-13:00	p-2022-034	Tal Itschakian Rom Schilman	3D coordinate acquisition system for Blind People Navigation	Prof. Hugo Guterman Dr. Ariel Luzzatto
13:00-13:20	p-2022-047	Asaf Halperin Tomer Alter	Correction of learning-based errors for underwater communication	Prof. Hugo Guterman Mr. Yair Mazal
13:20-14:00	p-2022-057	Kfir Atianu Eduard Grigoryan	Development of Real Time Hardware and Software for DNN Systems	Prof. Hugo Guterman
14:00-14:20	p-2022-060	Barnea Nir Aviad Ahrak	Light Invariant Underwater Video	Prof. Hugo Guterman
14:20-14:40	p-2022-061	Neil Saggy Raihel Roni	3D Virtual Auditory Display Aid for Blind People Navigation	Prof. Hugo Guterman Dr. Ariel Luzzatto
14:40-15:00	p-2022-117	Sharon Hadad	Semantic Image Segmentation with Deep Convolutional Nets	Prof. Hugo Guterman

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Session 11: Computer Vision, Image & Video Compression / IoT ***Chairman:***				
09:00-09:20	p-2022-077	Amit Levi Yohai Peretz	Drones Swarm detection from RF communication using DNN Rafael Advanced Defense Systems Ltd	Prof. Shlomo Greenberg
09:20-09:40	p-2022-015	Ido Stern Yossi Bodek	Implementation and accelration of DNN in embedded processor	Prof. Shlomo Greenberg
09:40-10:00	p-2022-016	Ron Kedar Yonatan Rak	Training algorithms for Spiking Neural Networks	Prof. Shlomo Greenberg
10:00-10:15	p-2022-017	Nadav Shapira	SNN-based Auto Encoder for branch predicition in MT processor	Prof. Shlomo Greenberg
10:15-10:30	p-2022-019	Naama Kra	FPGA-based Hardware Accelrator for DNN	Prof. Shlomo Greenberg
10:30-10:50	p-2022-095	Dor Yarchi Evgeny Andrachnik	Developing training algorithms for Distributed Machine Learning in IoT	Dr. Yehuda Ben-Shimol
10:50-11:05	p-2022-104	Tal Kapelnik	Development and implementation of Distributed Machine Learning for IoT	Dr. Yehuda Ben-Shimol
Session 12: Multidimensional Image Processing ***Chairman:***				
12:00-12:20	p-2022-009	Ariel Horowitz Tamar Rousso	Analyzing multispectral flood data 1	Prof. Stanley Rotman
12:20-12:40	p-2022-010	Elad Shadman Tom Galili	Detecting gas targets in hyperspectral dataq	Prof. Stanley Rotman
12:40-13:00	p-2022-022	Alexandre Troufanov Ohad Honigsman	Segmentation based on the local covariance matrix for hyperspectral target detection	Prof. Stanley Rotman
13:00-13:20	p-2022-023	Dorine Amsellem Natanel Yosef	Analyzing multispectral flood data 2	Prof. Stanley Rotman
13:20-13:40	p-2022-024	Evyatar Cohen Aviv Vaknin	Considering the substitution target detection algorithm	Prof. Stanley Rotman
13:40-14:00	p-2022-046	Ran Greidi Roi Shterenberg	Optimum covariance equalization for hyperspectral target detection	Prof Stanley Rotman
14:00-14:20	p-2022-079	Yaakov Mesilaty Shahar Mizrahi	Simulating elliptical contour data for hyperspectral target detection	Prof Stanley Rotman
14:20-14:40	p-2022-098	Guy Sivan Ilana Roumani	The Adaptive Cosine Estimator Algorithm for Hyperspectral Target Detection	Prof. Stanley Rotman

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Session 13: Communication Networks / Network algorithms / Control Systems Chairman:				
09:00-09:15	p-2022-124	Aziza Atayev	Machine learning for routing and scheduling in communication networks	Dr. Kobi Cohen
09:15-09:35	p-2022-087	Daniel Spysky Gal Schwartz	Enhancing P4 Programmable Switches for QoS Support	Prof. Chen Avin Mr. Gabriel Scalosub
09:35-09:55	p-2022-093	Anna Axalrod Shir Granit	Caching-based Acceleration Mechanisms in Datacenter Networks	Prof. Chen Avin Mr. Gabriel Scalosub
09:55-10:10	p-2022-108	Omer Yesod	The complexity of traffic traces in data centers	Prof. Chen Avin
10:10-10:25	p-2022-132	Daniel Gurevich	In-network aggregation emulator for machine learning	Prof. Chen AvinAvin Mr. Gabriel Scalosub
10:25-10:45	p-2022-110	Ron Eretz Kdosha Refael Ben Maor	Towards Designing Elaborate Networks of Feedback Loops	Prof. Izchak Lewkowicz
Session 14: Machine Learning Chairman:				
12:00-12:20	p-2022-053	Natan Ayalo Eden Gender	A self-training pipeline for collection of labelled voice and narrative samples from depressed patients	Dr. Dan Vilenchik
12:20-12:40	p-2022-054	Adi Green Or Daniel	A cognitive approach to deep-fake recognition	Dr. Dan Vilenchik
12:40-13:00	p-2022-083	Lotem Drori Eliav Herman	An automatic pipeline for assembling a large labelled corpus of burn images in infants	Dr. Dan Vilenchik
13:00-13:15	p-2022-094	Omri Assaf	Identifying mental diseases using textual cues	Dr. Dan Vilenchik
13:15-13:35	p-2022-036	Alon Goldmann Ofek Vayner	Deep Learning Aided Channel Decoding	Dr. Nir Shlezinger
13:35-13:55	p-2022-066	Elad Sofer Tomer Shaked	Preventing information leakage in deep learning on the edge	Dr. Nir Shlezinger
13:55-14:15	p-2022-111	Yotam Bar Asher Ron Tal	Learn to optimize for metasurface-aided communications	Dr. Nir Shlezinger
14:15-14:30	p-2022-113	Yaela Gabay	Focal seizure detection using model-based deep learning	Dr. Nir Shlezinger

Presentation Time	Project Number	Student Name	Project Title	Mentors
Session 15: Implementation of Neural Networks in Image & Video Chairman:				
09:00-09:20	p-2022-012	Tamar Pickholz Amit Ben Avi	Development of a Deep Learning Object Detector by Artificial Data Set Derived from the Cognata Photorealistic Self Driving Car Sim	Prof. Ofer Hadar Mr. Itai Dror
09:20-09:40	p-2022-014	Artur Boyd Rotem Berkowitz	Deep Learning Semantic Segmentation by Artificial Data Set Derived from the Cognata Photorealistic Self Driving Car Simulator	Prof. Ofer Hadar Mr. Itai Dror
09:40-10:00	p-2022-018	Shir Milstein Daniel Medvedev	Region of Interest (ROI) Video Rate Control by Reinforcement Learning for self-driving cars	Prof. Ofer Hadar Mr. Itai Dror
10:00-10:20	p-2022-029	Nave Lugasi Nitzan Yovel	Hand Pose Classification	Prof. Ofer Hadar Mr. Yoram Segal
10:20-10:40	p-2022-030	Lior Shveydel Dor Mayost	Human Pose Sequence Tagging in Videos Using Deep Learning	Prof. Ofer Hadar Mr. Yoram Segal
10:40-11:00	p-2022-033	Royi Zalk Tal Monfred	Multi-Image Super-Resolution Enhancement of SWIR images produced by the nano-satellite BGUSAT	Prof. Ofer Hadar Mr. Itai Dror
11:00-11:20	p-2022-039	Jameel Nassar Ahmad Murad	Teleoperated Self-Driving Car ROI Compressed Video Quality Assessment by Human Viewers	Prof. Ofer Hadar Mr. Itai Dror
Session 16: Implementation of Neural Networks in Image & Video Chairman:				
12:00-12:20	p-2022-052	Anastasia Ivanovski Noam Cohen	Deep learning video search and indexing of visual evidence presented at the United Nations Security Council meetings.	Prof. Ofer Hadar Mr. Itai Dror
12:20-12:40	p-2022-058	David Shmailov Aviram Lachmani	Cybersecurity: Vulnerabilities of AI systems, attacks, defenses and explanations	Prof. Ofer Hadar Mr. Itai Dror
12:40-13:00	p-2022-063	Hai Dvash Ariel Rabinovich	Action recognition by utilize moving vectors in video and CNN	Prof. Ofer Hadar Mr. Yoram Segal
13:00-13:20	p-2022-070	Sharon Golkarov Yogev Drori	Studying of encrypted real-time video channel behavior patterns, extracting channel quantifiable metrics and creating a new simula	Prof. Ofer Hadar Mr. Raz Birman
13:20-13:40	p-2022-071	Max Plotnikov Or Shamir	Training a deep learning algorithm to predict Quality of Experience (QoE) of encrypted real-time video content	Prof. Ofer Hadar Mr.Raz Birman
13:40-14:00	p-2022-072	Nadav Hadad Tamir Cohen	Extracting per-frame quantization parameter (Qp) from encrypted real-time video traffic	Prof. Ofer Hadar Mr.Raz Birman
14:00-14:15	p-2022-076	Omri Akrish	Video Analysis of Facial Expressions Using Deep-Learning with OpenPose	Prof. Ofer Hadar Mr. Yoram Segal
14:15-14:35	p-2022-102	Aharon Lugassy Saar Avraham	Emotion Recognition Using Eye-Tracking and Machine Learning	Prof. Ofer Hadar Mr. Itai Dror

Presentation Time	Project Number	Student Name	Project Title	Mentors
Session 17: Electromagnetic Propagation / Audio Signal Processing / Coding Theory Chairman:				
09:00-09:20	p-2022-090	Jonathan Cohen Gal Matarasso	Time-dependent Contrast-source imaging theory and application	Prof. Timor Melamed
09:20-09:35	p-2022-125	Yvgeni Naumov	Green's function Formulation for Planar Gradient Coils Design for MRI systems	Prof. Timor Melamed
09:35-09:50	p-2022-062	Itamar Dayani	Blind estimation of room reflections from real data	Prof Boaz Rafaely
09:50-10:05	p-2022-082	Shai Hermon	Binaural reproduction from device-embedded microphone array	Prof. Boaz Rafaely
10:05-10:20	p-2022-035	Gal Vaknin Yair Itzhak	Improving Access for PIR Schemes Using a Greedy Approach	Prof. Moshe Schwartz
10:20-10:35	p-2022-037	Kareem Hussein	Designing Integer Covering Codes for Limited-Magnitude	Prof. Moshe Schwartz
Session 18: Blockchain / Information Security /Algorithmics in Networks Chairman:				
12:00-12:20	p-2022-001	Carmel Nishri Omri Gil	Transfer of digital assets based on Blockchain	Prof. Benyamin Arazy
12:20-12:40	p-2022-007	Maayan Belzer Nir Tapiero	Identification/authorization based on Blockchain	Prof. Benyamin Arazy
12:40-13:00	p-2022-109	Tal Toboul Yossi Bouskila	Implementation of Web-Based Keylogger via Micro-Architectural Side-Channels	Dr. Niv Gilboa
13:00-13:15	p-2022-121	Matan Avitbul	NETWORK PERFORMANCE IMPROVEMENT THROUGH SMART HOPSETS	Prof. Michael Segal
13:15-13:35	p-2022-055	Omer Ber Raz Schnarch	Efficient management of mules in sensor environment	Prof. Michael Segal
13:35-13:55	p-2022-056	Niv Vaknin Yanir Avitan	Swarms assignments for dynamic environment	Prof. Michael Segal
13:55-14:15	p-2022-069	Meitar Kahalani Tal Cohen	Preediction of link failures in networks	Prof. Michael Segal

Presentation Time	Project Number	Student Name	Project Title	Mentors
Session 19: Computational Biology / Biomedical Signal Processing ***Chairman:***				
09:00-09:20	p-2022-027	Ofer Mittelman Omer Peretz	Improving computational prediction of RNA G-quadruplexes by deep neural networks	Dr. Yaron Orenstein
09:20-09:40	p-2022-078	Asaf Fadlon Tamar Oren	Improving RNA probing data prediction and applications using deep neural networks	Dr. Yaron Orenstein
09:40-10:00	p-2022-097	Maor Voitsechov Yuval Froman	Improving computational modeling of RNA degradation dynamics using deep neural networks	Dr. Yaron Orenstein
10:00-10:20	p-2022-100	Eden Beladev Ido Salomon	Improving deep neural networks to predict protein function	Dr. Yaron Orenstein
10:20-10:40	p-2022-116	Ravid Cohen Itay Semah	Time series analysis for probing synchronization of cultured heart cells	Dr. Tammy Riklin Raviv
10:40-11:00	p-2022-025	Elias Assaf Malaak Khatib	Geometry Design for DOA Estimation in Seismic Arrays	Prof. Tirza Routtenberg
11:00-11:20	p-2022-099	Guy Sagi Avia Shimoni	Genome-wide Computational Analysis of DNA Sequence Repeats using the Fourier Transform	Prof. Tirza Routtenberg Mr. David Lukatsky

We wish to thank the Departments Academic Junior and senior staff who participated in this unique day.

And mostly we wish to thank our students for participating in the conference
We wish you all success in the future.

Industry - Sponsored Projects :

√ ***Elta Systems Ltd.***

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